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PRELITERARY SCANDINAVIAN SOUND CHANGE VIEWED FROM THE EAST

UMLAUT REMODELLED AND LANGUAGE CONTACT REVISITED

Johan Schalin

(med utförlig resumé på svenska)

ACADEMIC DISSERTATION

to be publicly discussed, by due permission of the Faculty of Arts at the University of Helsinki in lecture hall 5, University Main Building (Fabianinkatu 33), on the 11th of September, 2018 at 12 o'clock.

AKADEMISK AVHANDLING

som med tillstånd av Humanistiska fakulteten vid Helsingfors universitet framlägges till offentlig granskning i universitetets huvudbyggnad, sal 5 (Fabiansgatan 33) tisdagen den 11 september 2018 kl. 12.

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Johan Schalin, 2018. *Preliterary Scandinavian sound change viewed from the east*: *Umlaut remodelled and language contact revisited.*

Abstract

In this compilation thesis the author pursues an improved diachronic phonological understanding of reconstructed pre-documentary Scandinavian language, with more in-depth consideration given to its vowel history, its eastern vernaculars and the lexical traces of contact with Finnic. Some of the main findings, notably those concerning the umlauts and the history of contrast in the vowel system, have implications for earlier Germanic vowel history beyond the study of Scandinavian.

In the first paper, sound substitutions are systematically examined in Finnic borrowings of eastern Scandinavian appellatives that contained a descendant of the Proto-Scandinavian diphthong *ai*. It is shown that the occurrences in these borrowings of common Finnic *ai*, *äi*, *ei* and Estonian *õi* are not very useful to verify a Proto-Scandinavian chronology of the Scandinavian diphthong assimilation *ai* > *æi* > *ei*. In the borrowings **lëikka*- 'cut', **këikku*- 'sway, teeter' and **këit*- 'isthmus, embankment, demarcation' a Late Proto-Finnic velar diphthong **ëi* is reconstructed, which reflects a sound substitution earlier than the umlaut period. Clarity is sought regarding the features of the Scandinavian 'palatal *r*', a fricative which is argued not to have been palatal and hardly trilled.

The focus in the second paper is on toponyms in present-day southern Finland, the etymologies of which have been claimed to represent borrowings between Finnic and Scandinavian from the Viking Age or earlier. An understanding of how phonological development of toponyms differs from that of appellatives is accounted for and a number of etymologies are evaluated against the best available knowledge of sound history and substitution practices. For example, the Swedish *Kjulo* (cf. Finnish *Köyliö* & *Kiulo*) is concluded to be a borrowing from the Early Finnish **Keül*-, while the Old East Scandinavian **Tafæistaland* is deemed to be autochthonous. Some light is shed on the nature of contacts between language communities, including the chronological and spatial context where such contacts may have occurred.

In the third paper, a book chapter prepared with the cooperation of Frog, phonological and other arguments are invoked to discuss the oldest toponyms along the sea routes in present-day Åland, aiming to place them in their chronological context. New arguments are proposed to clarify a case emanating from a work by Lars Hellberg (1987), that a few of the oldest toponyms in the Åland archipelago might belong to a stratum of seafaring names, which can plausibly be dated according to the eastern route of the Viking Age. These would include *Hammarland*, *Lemböte*, *Lemland*, *Lumparland* and *Åland*, and possibly *Styrsö*, *Järsö* and *Slemmern*. The etymology of *Åland* and corresponding Finnish *Ahvenanmaa* is discussed at length and a new solution sought with this perspective. The Finnish word *reitti* < Early Finnish '(sea) route, path' may have been borrowed in this era.

In the journal article which constitutes the fourth paper, the research situation concerning *i*-umlaut is scrutinised and, based on internal reconstruction, the defectiveness of previous attempts to explain the distribution of fronting in the vocabulary is illustrated. In the paper, ill-fitting data are reconfigured to facilitate a phonological explanation for why 'front umlaut' (term preferred over "palatal umlaut" or "front mutation") occurs variably in light-stem paradigms, even when least expected, as in the feminine abstracts in **-iþu* (cf. Old Swedish *dygþ* 'virtue'). A genuinely novel solution is proposed, based on the assumption that the contrast between Pre-Germanic */i/ and */e/ was upheld, not only in main stressed syllables, but also in syllables of relative prominence. A chain shift affecting the descendants of the proto-vowels is postulated and verified by their alterability in main stressed syllables when targeted by rounding umlauts and breaking. The same distinction and chain shift applied to trigger vowels and only descendants of Pre-Germanic */e/ triggered a front umlaut unconditionally.

The overall aim of the fifth paper, also published as a journal article, is to pursue an adequate diachronic phonological analysis of pre-documentary Scandinavian umlaut and breaking. It tackles the problem of whether vocalic breaking, front umlaut and rounding umlaut may be described using the Contrastive Hierarchy Theory within a single coherent analysis of initially metaphonic regressive feature spreading. Explanations are given for cases where alleged anomalies occur in the distribution of vocalic breaking, front umlaut and rounding umlaut in Old Scandinavian vocabulary, whenever a short trigger vowel in a light second syllable had followed another light main stressed target syllable (CV.CV.-). These explanations are achieved by postulating a vowel system in such triggering positions, which was different from the system sustained by fully reduced syllables. It also describes a plausible chronology for those changes to the vowel system that were induced by umlaut and syncope.

In the last section of the summary chapter, results attained in the papers are selectively compared and synthesised and some of their implications are highlighted. Topics discussed in further detail are the phonologisation of umlaut vowels and the features of the pre-documentary Scandinavian 'palatal *r*' (**z* > **z**/**ʀ** > *r*). Implications that the theoretical analysis of papers [P4] and [P5] may have for the prehistory of Scandinavian dialect geography are illustrated and the close relation between East and West Scandinavian, seemingly leaving out Gutnish and Övdalian, is explained. An apparent plunge in the intensity of Scandinavian-Finnic lexical borrowing is placed in the same spatial and chronological context, which may be interpreted as examples of linguistic consequences of the climate disaster in the decade beginning in 536 CE.

The five papers, each with different aims and methodology, have been published for different purposes. They all use diverse and imperfect evidence to improve phonological reconstruction and, where possible, etymologies. All papers concern sound systems during the millennium between the third and the thirteenth centuries CE and many relate to sound substitutions in borrowings between Finnic and Scandinavian languages. Recurrently, methodological issues are critically scrutinised.

KEYWORDS: Proto-Scandinavian, Proto-Nordic, Old Swedish, Old Gutnish, Old Norse, Övdalian, diachronic linguistics, historical phonology, umlaut, front mutation, contrastive feature hierarchies, Finnic, Baltic-Finnic, loanwords, sound substitution

HELSINGIN YLIOPISTO, Humanistinen tiedekunta
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Johan Schalin, 2018. *Preliterary Scandinavian sound change viewed from the east*: *Umlaut remodelled and language contact revisited.*
(*Skandinaavisten kielten äännehistoria esikirjalliselta ajalta itäisessä katsannossa. Uusi mallinnus umlautista ja uudelleenarviointi kielikontaktista*)

Tiivistelmä

Tässä artikkeliväitöskirjassa tutkitaan skandinaavisten kielten äännehistoriaa ja näiden kielten kontakteja itämerensuomalaisiin kieliin 200-luvulta 1200-luvulle jKr. sekä sellaista aiheeseen liittyvää paikannimistöä, joka tukee muita tutkimuskysymyksiä. Historiallisen äänneopin keinoin ja itämerensuomeen lainattujen sanojen äänneasua hyödyntäen tavoitellaan täsmällisempää analyysiä esikirjallisen skandinaavin äännejärjestelmästä ja sen muutoskuluista. Tutkimus esittää myös uusia päätelmiä kantaskandinaavin vanhimmasta murrejaosta ja siinä 500-luvulta alkaen tapahtuneista muutoksista, joita varoen ehdotetaan yhdistettäväksi suureen vuonna 536 alkavaan ilmastokatastrofiin. Vuosikymmenen ajan jatkuvista katovuosista kärsi koko pohjoinen pallonpuolisko, ja niiden seurauksista itäisen Ruotsin Mälarinlaaksoa ympäröivä asutus on saattanut järjestäytyä uudestaan (Löwenborg 2012).

Ensimmäinen artikkeli käsittelee äännesubstituutioita itämerensuomalaisissa lainasanoissa, joiden originaaleissa on esiintynyt kantaskandinaavin diftongi *ai* tai sen jatkaja. Erityisesti tutkitaan lainoja kuten *keidas*, *keihäs*, *keikkua*, *leikata* tai *leipä*, joissa nykysuomessa esiintyy diftongi *ei*. Näissä ei pidä olettaa, että diftongi todistaisi muutoksista kantaskandinaavin *ai*-diftongin ääntämyksessä, koska artikkelissa osoitetaan suomen kielen diftongin heijastavan toissijaisia kehityskulkuja itämerensuomessa. Lainat ovat siksi vanhempia kuin skandinaavin diftongissa tapahtunut etiytyminen *ai* > *æi* > *ei* ja näin ollen lainattu vuosisatoja aikaisemmin kuin ne nuoremmat lainat, kuten *reitti* ja *leikki*, joissa tämä muutos todistettavasti heijastuu.

Kahdessa seuraavassa kirjoituksessa käsitellään aikakauden nimistöä nykyisessä Lounais- ja Etelä-Suomessa: toisessa Ahvenanmaan vanhinta nimistöä (ml. nimet *Åland~Ahvenanmaa*) ja toisessa erityisesti skandinaavin ja suomen välillä lainattuja nimiä. Jälkimmäisessä punnitaan ajatusta siitä, että islantilaisen saagan käyttämä nimi *Herdala* Suomeen vuoteen 1008 ajoitettavan kahakan paikasta voitaisiin yhdistää nimeen *Karjaa*. Molemmissa kirjoituksissa käsitellään tanskalaisessa 1200-luvulta säilyneessä väyläkuvauksessa mainittuja nimiä Suomen eteläranniikon saaristossa. Pyrkimys terävöittää kuvaa keskisen ja nuoremman rautakauden kielikosketuksista on odotetusti tuottanut varsin epävarmoja tuloksia, koska säilynyt aineisto on hyvin harvaa ja moniselitteistä. Joidenkin paikannimien selityksiä on kuitenkin kyetty haarukoimaan entistä tarkemmin: heikoimmat vaihtoehdot on hylätty, pääosin äännehistoriallisiin perusteluihin tukeutuen.

Artikkeliväitöskirjan kahdessa viimeisessä artikkelissa on tutkittu syvällisesti kantaskandinaavisen kauden päätteeksi tapahtuneita vokaalimuutoksia, joiden myötä pääpainolliset vokaalit muuttuivat umlautien myötä sitä seuraavien vokaalien

vaikutuksesta. Muutosten johdosta toisistaan erotettavien vokaalien lukumäärä kutakuinkin kaksinkertaistui erityisesti palatalisoinnin (kuten näkyy ruotsin vaihtelussa *fram* ’eteen’, *främre* ’etumainen’) ja labialisoinnin (vrt. *dagg* ’kaste’, *dugg* ’tihku’) seurauksena. Sisäisen rekonstruktion menetelmin ja vertaamalla eri skandinaavin muinaismurteita keskenään voidaan kantaskandinaavin vokaalijärjestelmän käyttämiä erottavia äännepiirteitä analysoida uudesta näkökulmasta. Olettamalla, että umlauteissa näkyvät metafoniset vaikutukset olivat säännölliset, palautetaan ensimmäisen vuosituhannen puolivälin vokaalijärjestelmään keskinen tai takautunut dorsopalataalinen protovokaali **ɨ*, joka esiintyessään pääpainollisessa kohdetavussa vastusti labiaaliumlautia eikä laukaissut palataaliumlautia esiintyessään jälkitavussa. Tämä vokaali sekä etisempi koronaalivokaali **î* jakautuivat keskenään eri tavalla kunkin alkumurteen sanastossa, mikä johtui umlautkautta edeltävistä säännöllisistä äänteenmuutoksista.

Uuden analyysin myötä palataaliumlaut voidaan olettaa foneemistuneen vain kerran, kun taas labiaaliumlaut on osunut kahteen eri kehitysvaiheeseen. Väitöskirjan yhteenvetoluvussa perustellaan, miksi 500-luku näyttää muodostaneen rajan kaikista runsaimmalle lainautumiselle kantaskandinaavista. Entistä varhaisemmaksi ajoitettu ensimmäinen labiaaliumlaut ehti jättää jäljen lainasanoihin *olut* ← **ɒluþ-*, *rohkea* ← **wrɒskwa-* ja *louhi* ’salama’ ← **lɒugi-* ennen kuin ilmastokatastrofi näyttää keskeyttäneen laaja-alaisen lainautumisen 500-luvulla. Sen sijaan hieman myöhempi palataaliumlaut ei ole jättänyt jälkeäkään lainasanastoon, ei edes sanaan *kari*, missä muuten näkyy lainaoriginaalissa 500-lukuun mennessä sattunut vokaalikato **skarja* > **skarî*. Tämä ajankohta ei ainoastaan lankea yhteen muutosten kanssa kantaskandinaavin murrelevikissä, vaan osuu myös hämmästyttävän lähelle suurta ilmastokatastrofia.

Lisäksi artikkeleissa käsitellään laajasti skandinaavisissa kielissä esiintyvää germaanisesta sibilantista **z* kehittynyttä *r*-äännettä ja sen väitettyä palataalista ääntämystä, joka kiistetään. Väitöskirjassa esitetään myös näkökulmia Etelä-Suomen rannikon ruotsalaisasutuksen ajoituksesta ja olosuhteista.

AVAINSANAT: kantaskandinaavi, muinaisruotsi, muinaisskandinaavi, älvdalin kieli, muinaisgotlanti, diakroninen lingvistiikka, itämerensuomalaiset kielet, kantasuomi, lainasanat, äännesubstituutiot, historiallinen fonologia, erottavien piirteiden hierarkiat

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De första stegen på min väg till jämförande språkforskare tog jag som student i nytestamentlig grekiska, biblisk arameiska och alla slag av äldre och ny hebreiska. Mina inspirerande lärare vid universitetet och judiska församlingen i Helsingfors, Svenska teologiska institutet i Jerusalem och Åbo Akademi är värda stort tack. Allt detta kunde jag tillämpa i min språkvetenskapliga pro gradu-avhandling i exegetik.

My interest for linguistics grew during some intensive months at SIL British School in 1987-90, in studies led by some skilled experts in the field, whom I value highly.

Med sådana vassa verktyg och goda erfarenheter i bagaget föll det sig naturligt att analysera mitt modersmål och andra språk som talats i min egen hemregion. Mitt intresse för jämförelser och historia förde mig till lånordsforskningen och min personliga fallenhet för exakta vetenskaper till den diakrona ljudläran. Tillfälligheterna spelade in då min arbetskamrat Jani Leino presenterade mina bästa nya etymologiska idéer för professor emeritus Jorma Koivulehto (†2014), som han hade råkat bli bekant med. Detta ledde till en tid av handledning som har visat sig oumbärlig. Vid den tiden blev jag också bekant med Petri Kallio, vars betydelse som inspiratör, tålmodig frågelåda, bollplank och sedermera min handledare inte kan överskattas.

Steget från en hänförande hobby till en ansökan om studierätt för doktorsgraden kändes inte litet då det begav sig år 2011. Att ta det steget krävde en tillförsikt som min älskade hustru Mikaela Strömberg inspirerade till. Viktig var också den uppmuntran som jag från början bemöttes med av professorer på institutionen: Jan-Ola Östman, Riho Grünthal och Hanna Lehti-Eklund. Hanna blev min handledare och den som jag i alla oförutsedda situationer och sinnestillstånd kunde vända mig till. Utan hennes tillmötesgående och sakkunniga sätt att styra arbetet hade avhandlingen inte nått upp till den nivån där den nu är och knappast varit färdigt i skrivande stund.

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The very first draft for an article on umlaut was ready by February 2015. While I soon had to discard most of that text, it did contain the most essential innovation of

making a further distinction regarding two different palatal trigger vowels. The next couple of months brought about a sense of crisis; it meant more theoretical reading on vowel harmony and metaphony. Through the work on two palatal vowels in Proto-Eskimo, "strong i" and "weak i" (Compton & Dresher 2011) and the work by Seongyeon Ko on metaphonic fronting in Kalmyk/Oirat Mongolian I came to realise the potential of underlying contrast as a basis for explaining presence or absence of phonological activity. I here want to extend my sincere gratitude to Professor B. Elan Dresher for his helpful response to my communication and for taking the time to comment on my text and answer some specific inquiries related to theory and terminology.

I februari 2017 blev det kris, då jag efter fackgranskning och mitt under pågående språkgranskning förstod att en väsentlig detalj om medellåga bakvokaler i det övergångsnordiska vokalsystemet måste vara fel (nämligen utfallet av tidigarelagt labialomljud på /a/ som i *hugga* kan inte återföras på samma vokal som segmenteringsprodukten av *e* > (*j*)*o* som i *hjort*). Under en plågsam vecka då jag dessutom var sjuk och arbetsoförmögen begrundade jag om igen vilken dominoeffekt en korrigering av analysen skulle få på den uppsats som nu är placerad sist i avhandlingen, där allt beror på allt som i ett krypto. Sist och slutligen måste ca en femtedel av texten skrivas om under en högst pressad tidtabell. Under förevändingen av denna anekdot vill jag tacka den nu pensionerade huvudredaktören på NOWELE, Professor Hans Frede Nielsen, för att genom hela den redaktionella processen stött mig och trott på mig. Samarbetet med redaktionssekreterare Bo Wendt på ANF har likaså varit ypperligt.

I also want to thank my nice and skilled language revisors, Kate Sotejeff-Wilson and another, who wants to remain anonymous as a matter of policy and who showed great professionalism when becoming involved in the late revisions of my article for NOWELE. I also thank Frog in his role as an editor of the volumes where two chapters were published, as a co-author of one article and for being very accessible and helpful as an advisor on some difficult matters that arose during the work.

Ytterligare vill jag tacka Guus Kroonen och Tomas Riad för att ha ställt upp som förhandsgranskare och för mycket värdefulla kommentarer, av vilka en del ännu har kunnat beaktas i kappan. Jag värdesätter speciellt, i ljuset av så många andra åtaganden, att professor Riad har tagit sig tid att sätta sig in i avhandlingens specifika innehåll och bildat sig en välgrundad hållning till dess olika hypoteser. Jag är också glad för de goda råd jag fått av Manuela Tallberg-Nygård om avhandlingens slutförande och tackar Erik Snellman för stilistiska synpunkter på den svenska resumén och Lotta Aunio för hjälp med finslipandet av språket i det finska abstractet.

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I bussen på Borgå motorväg den 15 augusti 2018, Johan Schalin

Table of Contents – Innehållsförteckning

Förteckning over figurer och en uppställning

Figurer

Uppställning

List of tables, figures and maps

Tables

Figures

Maps

List of original publications – Förteckning av originalpublikationer

This thesis is based on the following five publications, grouped under three subtopics:

***Scandinavian-Finnic loanword phonology*:**

[P1] = Schalin, J. (2016). [P1] Östskandinavisk utveckling av den urnordiska *ai*-diftongen och palatalt *r* i ljuset av finska ljudsubstitutioner. In D. Andersson, L.-E. Edlund, S. Haugen, & A. Westum (Eds.), *Studier i svensk språkhistoria 13 : Historia och språkhistoria* (pp. 241–262). Umeå: Institutionen för språkstudier, Umeå universitet & Kungl. Skytteanska Samfundet.

Open access online at: http://urn.kb.se/resolve?urn=urn:nbn:se:umu:diva-121383

***Prehistoric toponymy in the Scandinavian-Finnish contact zone*:**

[P2] = Schalin, J. (2014b). Scandinavian–Finnish Language Contact in the Viking Age in the Light of Borrowed Names. In J. Ahola, Frog, & C. Tolley (Eds.), *Fibula, Fabula, Fact: The Viking Age in Finland* (pp. 399–436). Helsinki: SKS Finnish Literature Society.

Open access online at: https://doi.org/10.21435/sfh.18

[P3] = Schalin, J., & Frog. (2014). Toponymy and Seafaring: Indications and Implications of Navigation along the Åland Islands. In J. Ahola, Frog, & J. Lucenius (Eds.), *The Viking Age in Åland: Insights into Identity and Remnants of Culture* (pp. 273–302). Helsinki: Finnish Academy of Science and Letters.

***Front umlaut and related regressive metaphony*:**

[P4] = Schalin, J. (2017a). Scandinavian Front Umlaut Revisited and Revised. *Arkiv för nordisk filologi (ANF), 132*, 5–74.

Delayed future open access online at: http://www.sol.lu.se/anf/utkomna-argangar/
Note offprint at: https://www.researchgate.net/profile/Johan_Schalin/contributions

[P5] = Schalin, J. (2017b). Scandinavian umlaut and contrastive feature hierarchies. *North-Western European Language Evolution (NOWELE), 70*(2), 171–254.

Online at: http://dx.doi.org/10.1075/nowele.70.2.03sch

The publications are referred to in the text in square brackets, as indicated.

Abbreviations and acronyms – Förkortningar

AEW=Vries, J. de. (1977). *Altnordisches etymologisches Wörterbuch* (2. verbesserte Aufl [1. ed. from 1957–60]). Leiden: Brill.

ATR=Advanced tongue root

CFH=Contrastive Feature Hierarchy

CHT=Contrastive Hierarchy Theory (NB: different from the Contrastivist Hypothesis)

DEO=Nielsen, N. Å. (1985). *Dansk etymologisk ordbog: ordenes historie* (4. opl. [1. ed. from 1966]). København: Gyldendal.

EDPG=Kroonen, G. (2013). *Etymological dictionary of Proto-Germanic*. Leiden: Brill.

Fc='Finnic', see note on bottom of this page

Fi='Finnish', see note on bottom of this page

FSB=Finlandssvenska bebyggelsenamn. [Etymological data base]. Accessible at http://bebyggelsenamn.sls.fi/

Gmc='Germanic', see note on bottom of this page

IPFC=Inalterability of Proper Features Constraint

LägLoS=Kylstra, A. D., Hahmo, S.-L., Hofstra, T., & Nikkilä, O. (1991). *Lexikon der älteren germanischen Lehnwörter in den ostseefinnischen Sprachen* (1991–2012, Vols 1–3). Amsterdam; Atlanta; New York: Rodopi.

ON='Old Norse'

[P1]=Schalin, J. (2016).

[P2]=Schalin, J. (2014b).

[P3]=Schalin, J., & Frog. (2014).

[P4]=Schalin, J. (2017a).

[P5]=Schalin, J. (2017b).

PEO=Katlev, J. (2000). *Politikens etymologisk ordbog: [danske ords historie*. (C. Becker-Christensen, Ed.) (1 udg., 1. opl). København: Politikens forlag.

SAOB=*Ordbok över svenska språket, utgiven av Svenska Akademien* 1893- [Dictionary of the Swedish Academy]. Lund. Accessible at https://www.saob.se

Sc='Scandinavian', see note on bottom of this page

SEO=Hellquist, E. (1980). *Svensk etymologisk ordbok* ([3. korrigerade upplagan [1. ed. from 1922], Vols 1–2 volumes). Lund: Liber.

SPK=Paikkala, S. (Ed.). (2007). *Suomalainen paikannimikirja*. Helsinki: Karttakeskus.

SSA=Itkonen, E., & Kulonen, U.-M. (Eds.). (1992). *Suomen sanojen alkuperä: etymologinen sanakirja* (1992nd–2000th ed., Vols 1–3 volumes). Helsinki: Suomalaisen Kirjallisuuden Seura : Kotimaisten kielten tutkimuskeskus.

SUBS & subs.='subsection(s)' (references to the attached papers in lower case).

VAEO=Bjorvand, H., & Lindeman, F. O. (2007). *Våre arveord: etymologisk ordbok* (rev. og utv. utg [1. ed. from 2000]). Oslo: Novus forlag.

* For abbreviations of language stages ending in 'Gmc', 'Sc', 'Fc' or 'Fi', see the first mentions, and for full reference the definitions in FIGURE 1 and/or TABLE 4.

Svensk resumé (Synopsis in Swedish of the compilation thesis)

Johan Schalin, 2018. *Preliterary Scandinavian sound change viewed from the east*: *Umlaut remodelled and language contact revisited.*
(*Nordiska språkens förlitterära ljudhistoria i östligt perspektiv. Nymodellering av omljudet och språkkontakt i stöpsleven*)

Denna sammanläggningsavhandling inbegriper fem uppsatser med olika målsättningar och metoder, alla utgivna för skilda ändamål, i varierande publikationsfora och med olika läsekrets. Som helhet sammanbinds de av ett antal gemensamma teman inom skandinavisk *historisk fonologi* (diakron ljudlära), *historisk lexikologi* (etymologi), skandinavisk-östersjöfinsk *lånordsforskning* och *ortnamnsforskning*. Gemensamt för alla fem uppsatser är också att de behandlar språkskeden som infaller under samma årtusende, nämligen perioden från 200-talet till 1200-talet e.Kr. Alla uppsatser har tillkommit i en och samma fortlöpande skapande process med fokus på teoretisk och kontextualiserad historisk skandinavisk ljudlära.

Utmärkande för min avhandling är att den kombinerar forskningsperspektiv från olika discipliner och också olika perspektiv mellan den språkhistoriska disciplinens specialområden inbördes. Särskilt i avhandlingens kappa, men också i artiklarna konfronteras forskning från olika områden sinsemellan. Jag har delat upp alstren i tre grupper av uppsatser, vilket möjliggör en diskussion om syften och metodologi med en uppdelning i tre i stället för fem delavsnitt. I avsnitt 3 i kappan diskuteras följaktligen uppsatserna (jfr engelska ”papers”) [P2] och [P3] i ett delavsnitt och uppsatserna [P4] och [P5] i ett annat. I fjärde avsnittet i kappan jämförs och syntetiseras de fem uppsatsernas resultat på så sätt att sådana implikationer som med olika grad av nödvändighet följer av de nya rönen lyfts fram. Detta öppnar också upp för nya idéer och hypoteser som kunde testas i fortsatt forskning.

I uppsatsen [P1] undersöks lånord upptagna i östersjöfinska (härefter ”fenniska”) språk från urnordisk till tidig fornskandinavisk tid. En bättre analys av ljudsubstitutioner eftersträvas och ljudsubstitutionernas vittnesbörd om skandinaviska ljudutvecklingar undersöks. Uppsatserna [P2] och [P3] granskar ortnamn i en sydvästfinländsk kontaktzon mellan östskandinaviska mål i olika utvecklingsskeden å ena sidan och fenniska med därpå följande (vikingatida) "tidigfinska" och medeltida finska å den andra. I uppsatserna [P4] och [P5] eftersträvas en adekvat beskrivning av omljudens uppkomst och en ny fonologisk analys av omljudstidens på varandra följande vokalsystem förespråkas.

Den här svenska resumén sammanfattar både kappan och delar av artiklarna medvetet selektivt, så att sådana resultat ges större utrymme som bedöms kunna möta mer övergripande eller beständigt intresse inom ramen för nordisk ljudhistoria eller bedöms få större genomslag i en interdisciplinär eller populär diskurs. Endast avsnitt III. är strikt indelat enligt uppsatserna numrering. Avsnitt I. leder direkt in i huvudsakliga forskningsresultat med strävan efter en läsarvänlig presentationsordning medan avsnitt II. sammanfattar diskussionen av metod mycket kort.

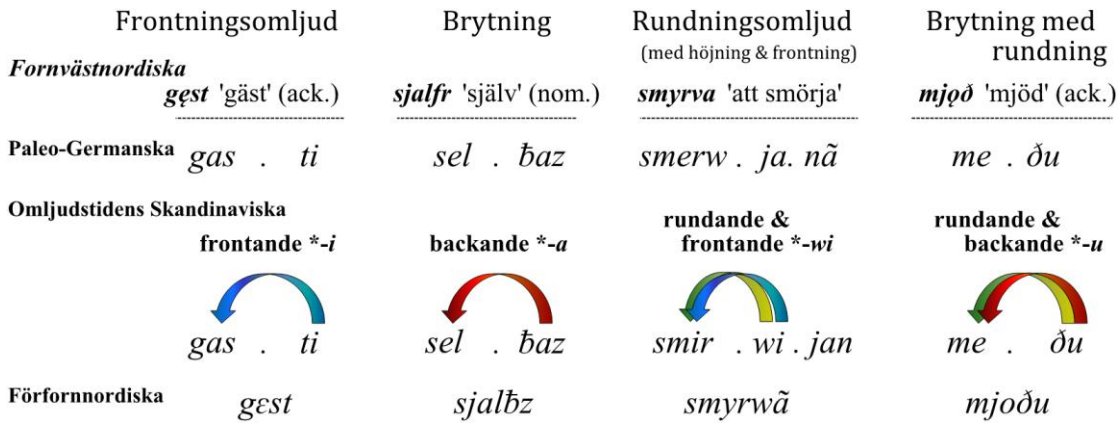
I. Inledning i forskningens frågeställningar och viktigaste resultat

I uppsats [P1] undersöks alla skandinaviska lånord i fenniska språk från förhistorisk tid där substituten av efterföljare till den urnordiska (härefter ”urn.”) diftongen *ai* idag representeras av någon annan diftong än [ɑi], nämligen finska (härefter fi.) och estniska (härefter estn.) *ei* som i *leipä*/*leib* ’bröd’ < **laipa* ← **hlaibaz*, fi./estn. *äi* som i fi. *äiti* (jfr sydestn. *äidi*) ’mor, mamma’ < **äitei* ← **aiðijōn* eller estn. *õi* som i *lõikama* ’skära, klippa’ (jfr fi. *leikata*) < **lëikka-* ← **blaikijan*. Antalet lån uppgår till ett drygt dussin, där det exakta antalet beror på hur säkra etymologierna är. Problemställningen är intressant för frågan om man i lånen kunde skönja spår av regressiv palatal diftongassimilation *ai* > *æi* > *ei* i de skandinaviska låneoriginalen. Detta har beröringspunkter med en del ortnamnsetymologier behandlade i [P2] och speciellt med frontningsomljudet behandlat i [P4] och [P5].

I uppsatserna [P2] och [P3] förbättras och korrigeras ett urval av ortnamnsetymologier från kontaktzonen mellan skandinaviskt och fenniskt språkområde, inbegripet sådana som är (*Karis* ← medelt. fi. *Karja[h]a*) eller har påståtts vara (*Tavast*-) låneetymologier, och sådana där låneriktningen är osäker (*Kiulo ~Köyliö* och *Åland ~Ahvenanmaa*). Frågan om ortnamnens fonologiska utveckling (och ibland särutveckling) och tillpassning vid inlåning till ett målspråk behandlas relativt ingående. Uppsatserna belyser dessutom indirekt genom ortnamnens vittnesbörd det historiska sammanhang i tid och rum där språken stått i kontakt med varandra och under motsvarande perioder med olika intensitet utbytt lånord. Resultaten har betydelse för att förstå vilken typ av slutsatser som kan dras eller inte kan dras med tillhjälp av lånordsevidens gällande det skandinaviska språkets ljudutveckling.

I. a. Omljudet och vokalsystemen mellan urnordisk och fornskandinavisk tid

Intressant för framtida fonologisk diskussion är den nya ljudhistoriska beskrivningen av 500/600-talens övergångsnordiska, som jag i uppsatserna [P4] och [P5] har valt att kalla ”Transitional Scandinavian”. De omvälvande förändringarna av vokalsystemet som skedde mellan urnordiskan och uppkomsten av de klassiska fornnordiska skriftspråken undersöks i [P5] med en ambition att nå en inrymmande och övergripande fonologisk förklaring. Analysen är uppgjord med stor respekt för att ljudförändringar i allmänhet bör analyseras som regelbundna och att undantagen i utgångspunkten ska vara förklarbara. Genom att beakta undantag bättre i utgångspunkten bör enklare förklaringar på mångahanda svårförklarliga vokalförhållanden i ordförrådet kunna uppnås. I den subjektiva forskningsprocessen har den nordiska ljudhistoriens mest intrikata prövostenar använts som resurser och inspirationskällor för att blottlägga nya mönster och uttyda nya orsakssamband. Dessa problem har också i slutändan blivit lösta med förklaringar som kan beskrivas som mer enhetliga och sammanhängande än förr, samtidigt som de kan ses som oväntade.



Figur 1. Olika typer av omljud betraktade genom analys av kontrastiva särdrag.

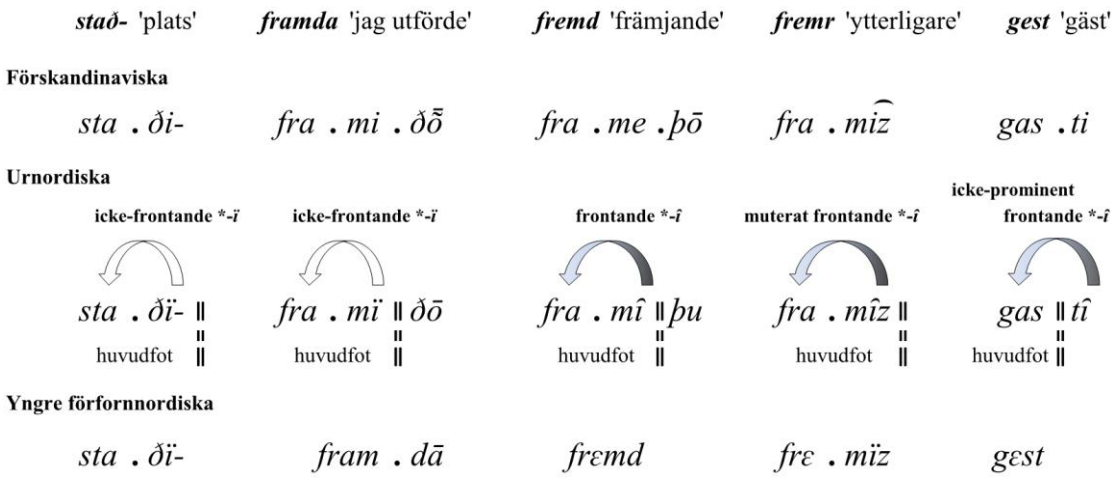
Många av de således förklarade gåtorna hör till ett större problemkomplex som handlar om hur de olika posturnordiska, övergångsnordiska och förfornnordiska omljuden har utlösts och blivit grammatiskt särskiljande och hur de sinsemellan hör ihop (för en beskrivning se Widmark 1991:89–172). Hit hör t.ex. höjningsomljud (*i/j*-omljud på *e*), sänkningsomljud (*a*-omljud), frontningsomljud (*i/j*-omljud, *iʀ*-omljud, *ʀ*-omljud och *g/k*-omljud på icke-palatala vokaler), rundningsomljud (*u*-omljud på låga vokaler och *w*-omljud) och därtill brytning av *e* utlöst av *a* eller *u* och brytning av *ky-*/*gy-* utlöst av efterställt *r*. I figur 1 illustreras speciellt de omljud som påverkar s.k. ”tonalitetssärdrag”, dvs. särdrag som bestämmer tungbladets frontning och läpparnas ställning ([P5]:176). Till dessa omljud, som behandlas utförligast i avhandlingen, hör också frontningsomljudet.

En del av de avhandlade problemen blev uppenbara för nästan 200 år sedan då Rasmus Rask och Jacob Grimm för första gången med välgrundad metod blottlade de väst- och nordgermanska omljuden (Rischel 2002:127; Basbøll & Jensen 2015:161f). Därefter har generationer av ljudhistoriker med skiftande framgång brottats med att försöka förklara undantag till postulerade ljudlagar och med att i grunden förstå genom vilka mekanismer omljudet överhuvudtaget verkade (Szulc 1964: passim; Awedyk 1975: passim; Hreinn Benediktsson 1982: passim; Rasmussen 2000:143–145; Liberman 2007:13ff; P. Kiparsky 2009:42–45 med hänvisningar). I uppsatserna [P4] och [P5] visas att ingen samsyn föreligger beträffande omljuden och dessutom i [P4] att de förklaringar som erbjudits under senare år inte är hållbara.

Inledningsvis kan uppmärksammas att den resulterande analysen bl.a. löser den bäst kända olösta gåtan varför *i*-omljud ofta, men inte alltid, uteblir i korta rotstavelser då en palatal utlösarvokal likaså har stått i en kort stavelse. De klassiska fornvästnordiska (”fvn.”) exemplen utgörs av 1:a pers. sg. preter. av 1:a klassens svaga verb, urn. **ta.li.ðō* > fvn. *talða* ’jag förtäljde/förtalte, räknade’ (i stället för förväntat +*telða*), och maskulina *i*-stammar, exemplifierade av nom./ack. sg. urn. **sta.ði-* > fvn. *stað-* ’ställe, plats’ (istället för +*steð-*). Med avsikt att presentera subminimala par är det förra exempelordet i figur 2 utbytt mot fvn. *framda* ’jag utförde, främjade’. Med material från nusvenska kan samma problem illustreras med vokalväxlingen mellan å

ena sidan *välja*, *dölja* och *mätt* ’fulläten’ < urn. **matiða-*, och å andra sidan *valde*, *dolde* och *mat* < urn. **mati-*.

Ingen förklaring har getts som fullt ut skulle redogöra för varför omljudet uteblir i de senare fallen och till stor del är uppsats [P4] upptagen med att nu förklara just detta. Analysen består av en bättre rekonstruktion av sinsemellan kontrastiva utlösarvokaler. Ledtrådar har funnits i Eva Ejerhed Braroes (1979:49f) analys av förhållandet mellan sidobetoning och omljud, Gun Widmarks (1991:123–126) beskrivning av *iʀ*-omljudet och på sätt och vis i Lennart Elmeviks (1993:81–83) idé om en helt inaktiv utlösarvokal i ackusativ singularis av *i*-stammarna. Det nya består i att generalisera Widmarks lösning för *iʀ*-omljudet till allt *i*-omljud i kort stavelse och att hänföra kontrasten mellan de två vokalerna till en nedärvd skillnad mellan förgermanskt **e* och **i*, som i sin tur var bevarad i mindre reducerade stavelser, enligt en analys av betoning som påminner om Braroes.



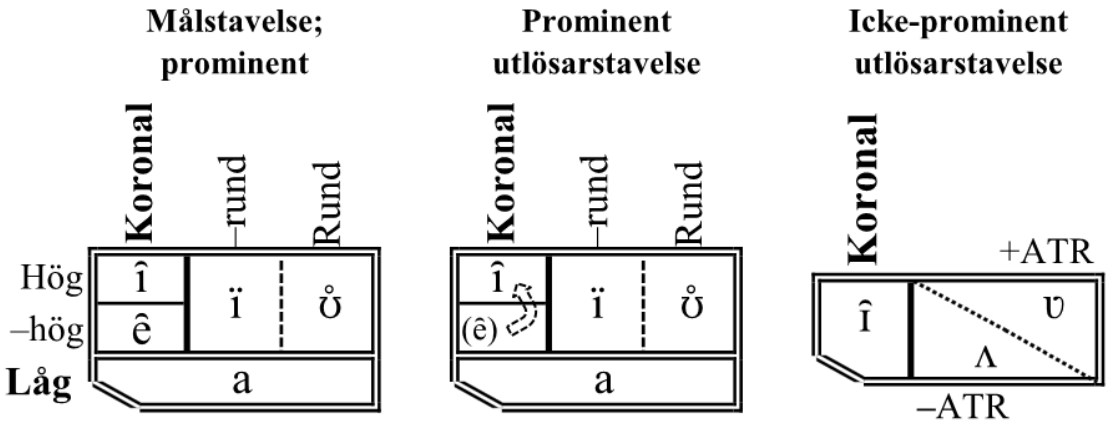
Figur 2. Olika palatala utlösarvokaler i prominenta och icke-prominenta stavelser.

De tre första exemplen (från vänster räknat) i figur 2 illustrerar hur denna nedärvda kontrast är bevarad i stavelser som befinner sig inom den bimoraiska huvudfoten, och hur kontrasten tar sig uttryck i olika omljudseffekt. Det fjärde exemplet visar att efterföljare till förgermanskt **i* som har stått framför ett tautomorfemiskt **z* har sammanfallit med efterföljare till förgermanskt **e*. Det femte exemplet visar att sådant sammanfall skett obetingat om vokalen stått i fullt reducerad stavelse utanför den bimoraiska huvudfoten (se vidare i delavsnitt III.d. nedan).

Medan uppsats [P4] uppehåller sig vid denna mer snävt avgränsade fråga närmar sig uppsats [P5] omljudstiden mer övergripande. Ett utgångsantagande utgör den ”kontrastivistiska hypotesen” (Hall 2007:20f), som stipulerar att bara egenskaper som är kontrastiva, dvs. utnyttjade i särskiljande funktion i ett specifikt språks ljudsystem, kan generera fonologisk aktivitet. Av detta följer att ett icke-kontrastivt (vare sig ”allofoniskt” eller ”redundant”) särdrag inte kan förväntas ha någon som helst påverkan på intilliggande fonem, och omvänt att man från observerad fonologisk

aktivitet kan sluta sig till existensen av ett kontrastivt särdrag som aktiviteten har sitt ursprung i.

Med detta för ögonen härleds de urnordiska och posturnordiska vokalsystemens kontrastiva särdrag baklänges med utgångspunkt i fonemens aktivitet under omljudstiden (jfr figur 3 med figurerna 1 och 2 ovan). Detta ställs i motsats till det förhärskande tillvägagångssättet som utgår från givna vokaler med givna egenskaper och sedan framskrider till att pröva den omljudseffekt som vokalerna, på basis av oredovisade och intuitiva antagen, förväntas utöva på varandra. I den förhärskande proceduren för problemlösning har de välkända oväntade utfallen stått kvar som olösta residuer. Detta i motsats till det resonemang baklänges som tillämpas här, där de oväntade utfallen utgör resurser för en bättre vokalrekonstruktion. Proceduren är möjlig bara om vokalerna inte först schablonmässigt tvingas in på en förenklad tvådimensionell yta inom ramen för en klassisk fonetisk trapetsoid (fyrsiding) av IPA-typ utan istället antas bestå av knippen av kontrastiva särdrag.



Figur 3. Västskandinaviska posturnordiska hierarkier för kontrastiva särdrag i prominenta och icke-prominenta stavelser, med streckens tjocklek motsvarande kontrastens hierarkiska rang och symboler som de definierats i [P5].

Konsekvensen av den omvända metoden är en rekonstruktion av två olika vokalsystem för prominenta respektive icke-prominenta stavelser och en något modifierad beskrivning av hur prominensen under omljudstiden tillskrevs ordens stavelser. I figur 3 (jfr FIGURE 7 i kappans delavsnitt 3.5.3 där ett lite tidigare stadium illustreras i trädform) illustreras hierarkier för kontrastiva särdrag i tre typer av stavelser. Längst till vänster visas det femvokalsystem som gällde i huvudbetonade stavelser. Samma vokalsystem, illustrerat i mitten, upprätthölls i relativt prominenta stavelser utan huvudbetoning. Längst till höger illustreras trevokalsystemet i fullt reducerade stavelser (se vidare i delavsnitt III.d. nedan). Symbolerna som används definieras i [P4]:36, [P5]:4.4.2 och i kappans delavsnitt 3.5.3.

I. b. Om språkkontakt och lånordens fonologiska vittnesbörd

I uppsatserna [P2] och särskilt [P1] kan en bild skönjas som tyder på en svacka i de skandinavisk-fenniska språkkontakterna mellan begynnande 500-tal och fornsvensk tid. Materialet är dock mångtydigt och slutsatsen måste hanteras med stor försiktighet. Dateringskriterierna vid bedömning av enskilda etymologier i [P1] är oftast varken helt osvikliga eller exakt tidsbestämmande och därför måste sannolikheter bedömas på basis av den sammantagna vittnesbörden av lånord, och dessutom i ljuset av fall där flera överlappande karakteristika sammanstrålar i samma lånord. Trots dessa osäkerhetsmoment kan man med viss sannolikhet skönja en period där inlåningen tycks avta ganska markant. Tidpunkten för detta infaller misstänkt nära den stora klimatkatastrofen med början år 536 e.Kr. (Löwenborg 2012; Tvauri 2014). Bilden står inte i konflikt med ortnamnens vittnesbörd i [P2]; de få rimligt goda germanska etymologierna för finska ortnamn (se [P2]:406) är inte yngre än perioden strax före år 500 e.Kr. som präglades av intensiv inlåning av appellativer från nordvästgermanskt och urnordiskt språk (se kappans delavsnitt 2.2 nedan). När ett antal yngre förkristna lånord igen uppträder verkar det övervägande röra sig om ord kring sjöfart och handel, vilka torde kunna sammanställas med östhandeln ca 750-1050 e.Kr. (Ahola & Frog 2014:38ff, 42; Roslund 2017).

Spår av allofoniskt skandinaviskt omljud saknas praktiskt taget helt i fenniska lån. Det är tänkbart att en nedgång i skandinavisk-fennisk språkkontakt vid inträdet av omljudstiden möjligen är en delorsak till denna oväntade avsaknad. En annan bidragande orsak kan vara att allofoniskt omljud inte var tydligt artikulerat under en närapå så lång fas som man hittills ofta har föreställt sig. Det som med strukturalistisk terminologi kallas det ”allofoniska” stadiet, dvs. då de nya klangfärgerna inte upprätthöll grammatisk kontrast utan istället berodde på sin ljudomgivning genom koartikulation, kan enligt analysen i [P5] uppdelas i tre utvecklingsstadier: under en långvarig fonetisk fas var de akustiska modifieringarna små och reflekterades inte i lånord. Större modifieringar uppkom under två mycket kortvariga fonologiska faser som med accelererande tempo matade en utveckling mot fullt genomfört kontrastivt omljud med särskiljande funktion i ljudsystemet och därpå efterföljande fullbordad synkope. Analysen i [P5] förklarar denna tredelning av omljudsförloppet och rentutav förutsätter att omljudet var akustiskt sett klart urskiljbart bara under de kortvariga stadierna. Se mer härom i delavsnitt III.e. (nedan).

I. c. Om behandlingen av s.k. ”palatalt *r*” i uppsatserna

Betraktade var för sig och avskilda från helheten är rönen i uppsatserna [P1], [P2] och [P3] inte fullt lika omdanande för den ljudhistoriska grundforskningen som rönen i [P4] och [P5]. Enskilda etymologier har förbättrats och korrigerats och nya synpunkter har anförts på den palatala diftongassimilationen i den urnordiska diftongen *ai*, närmare bestämt i de östliga dialekter som har stått i kontakt med fenniska. De här

synpunkterna är förenliga med analysen av omljud i [P4] och [P5] och har också jämförts och sammanställts med den analysen i kappans avsnitt 4. Ett särskilt spörsmål där synergin mellan uppsatserna är speciellt påtaglig är slutsatserna gällande s.k. ”palatalt *r*”, vars utveckling har utgått från ett urgermanskt */z/ och fortgått ända till sammanfallet med fornskandinaviskt /r/. I [P1] tas avstamp i en bedömning av fonemets och dess eventuella allofoners reflexer i fenniska (och delvis samiska) lån och dessutom bedöms kritiskt sannolikheten att egenskaper som tremulans, palatalitet och frikativitet skulle ha kunnat samexistera i fonemet. I [P4] och [P5] tas frågan upp med utpräglat fonologiska (i motsats till fonetiska) argument och slutsatser om fonemets egenskaper dras på basis av dess påverkan på närliggande vokaler. I kappans delavsnitt 4.1 sammanställs och jämförs resultaten i de tre uppsatserna systematiskt och syntesen bedöms uppgå till övertygande bevis för ett eller två långlivade övergångsstadium mellan */z/ och /r/. Under hela omljudstiden har fonemets aktivitet i såväl omljud som i metriskt betingad reduktion av föregående vokal, liksom i många assimilationsprocesser, varit förenlig med att det varit en *frikativa* som alltså har skilts åt från /r/ genom *sonoritet*. Från de andra koronala frikativorna har övergångsfonemet mellan */z/ och /r/ skilts åt med en kontrastiv egenskap för laminal artikulation. Detta förutsätts av dess aktivitet för *iʀ*- och *ʀ*-omljud. Ett ”palatalt” fonem bedöms inte gärna ha kunnat sprida den egenskapen och heller inte gärna ha kunnat substitueras med *-r-* i nordfenniskan. Fonemet kan ha varierat mellan *[ɻ̟] och *[z̠] (den underställda fyrhörningen är IPA-symbolen för laminal artikulation) och kunde betecknas med endera symbolen. Dessutom kan man ifrågasätta om det under det senare skedet av dess existens har varit kontrastivt tonande. Med undantag av */s/ kontrasterade ju inte vid den tiden andra frikativor med varandra som tonlösa respektive tonande i identisk fonologisk miljö.

II. Om forskningens metoder, utgångspunkter och grundantaganden

Urnordiska och posturnordiska ljudförhållanden granskas i [P1] (och delvis i [P5]) med vad jag valt att kalla ”historisk-komparativ lånordslexikologisk metod”, en metodologi inom den skandinavisk-fenniska lånordsforskningen i en forskningstradition som bygger vidare på Jorma Koivulehtos (1934–2014) livsverk. För att analysera och beskriva ljudhistorien utnyttjas i [P4] och [P5] speciellt s.k. ”intern rekonstruktion”, medan den senare uppsatsen dessutom jämför det nordgermanska språkmaterialet med historisk-komparativ metod och kompletterar resonemanget med utgångsantaganden baserade på prosodisk teori och kontrastiv fonologi. Ytterligare kontextualiseras resultaten i tid och rum i de kompletterande uppsatserna [P2] och [P3] genom fonologiskt orienterade diskussioner om sådana ortnamnsetymologier som hänför sig till kontaktzonen mellan nordiskt och fenniskt språk. Alla uppsatser problematiserar metodologiska spörsmål och för på sina ställen en dialog om sådana med ett vetenskapsfilosofiskt perspektiv.

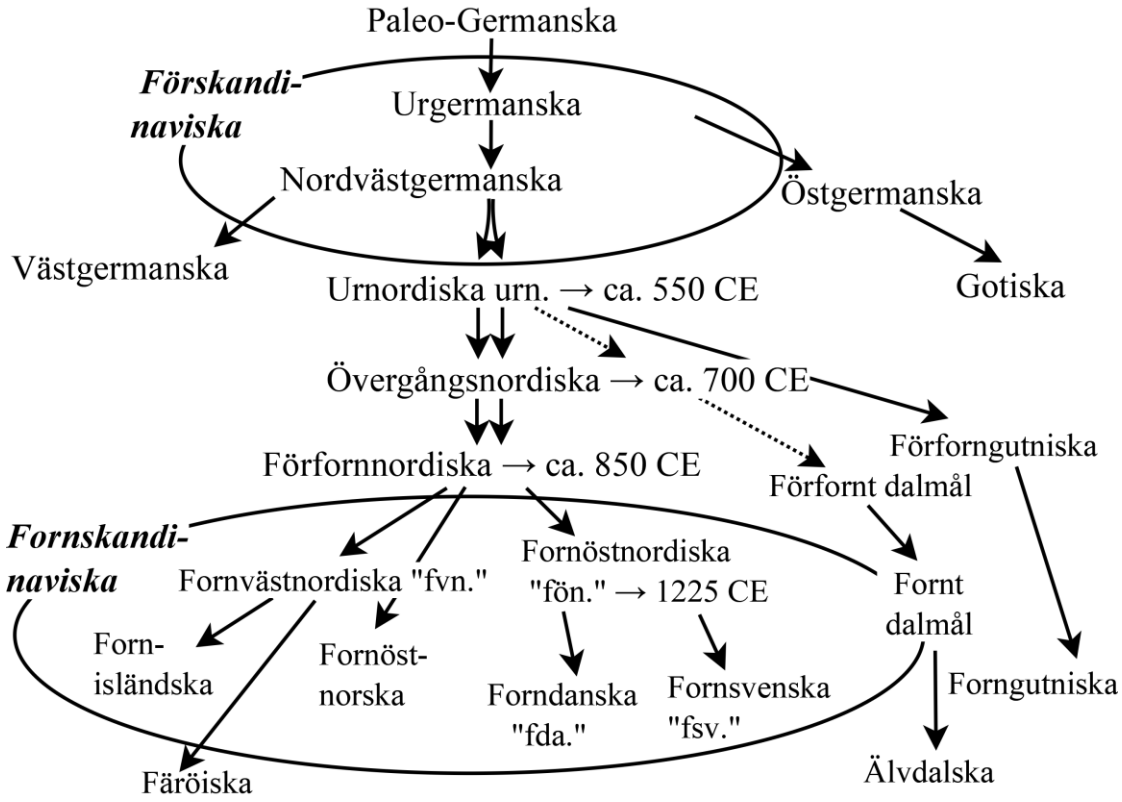
Med alla dessa verktyg angrips språkutvecklingen i den studerade tidsperioden med avsikt att överbrygga den stora kunskaps- och forskningslucka som faller mellan de språkskeden som bäst representerar germanisters och nordisters respektive specialkompetens. I synnerhet angrips de problem som behäftar beskrivningen av de skandinaviska ljudsystemen mellan å ena sidan den egentliga urnordiskan, så som den förelåg innan bortfallet eller ”synkopen” av omljudets utlösarvokaler i andra stavelsen, å andra sidan senvikingatida fornskandinaviska och de klassiska fornnordiska skriftspråken med fullbordade omljud och slutförd förhistorisk vokalreduktion.

En stor brokighet och inkonsekvens är uppenbar i olika sätt att periodisera tiden mellan urnordiska och fornskandinaviska. Några goda exempel på olika handboksförfattares periodiseringar är illustrerade med en jämförande uppställning i TABLE 1 i kappans delavsnitt 1.2 nedan. Det ter sig som om brokigheten på ett följdriktigt sätt avspeglar en oförmåga att beskriva de övergångsstadier som periodiseringen borde omfatta och således att det här faktiskt föreligger en verklig kunskapslucka. På ett mer analytiskt plan har kunskapsluckan synliggjorts i kappans delavsnitt 2.3.2 med en klassificering av olika sinsemellan uteslutande hypoteser om *i*-omljudet. De fundamentala motsägelserna mellan dessa hypoteser är i sin tur en direkt följd av den villrådighet som karaktäriserar dispyterna om palatal- eller ”frontnings-” omljudets mekanism och lagbundenheter, samt dess kronologi.

Alla medel som kunde ha stått till buds har inte använts fullt ut i uppsatserna, utan avgränsningar har gjorts. Skandinavisk-samisk lånordsforskning har hittills varit av stor betydelse och kan säkert i framtiden kasta ytterligare ljus över den omdiskuterade perioden men utnyttjas bara sporadiskt i avhandlingen. Inte heller runinskrifter har använts på ett systematiskt sätt, även om föreliggande runologiska rön ställvis hänvisas till som sekundär evidens. Runbeläggen är både svårtydda och knappa, en brist som i synnerhet gäller den äldre omljudstiden på 500/600-talet, en tid då dessutom det äldre runalfabetet trots en del ansatser inte blev närapå följdriktigt anpassat till de pågående vokalförändringarna. Mot bakgrund av denna problematik har jag i avhandlingen och dess överskrift valt att beteckna språkstadierna som infaller före fornskandinaviska med ett etablerat ord ”preliterary” (”förlitterär”), även om runinskrifterna förvisso bör ses som ”litterära” i en vidare bemärkelse.

Som utgångspunkt för min avhandling ligger min bedömning att forskarsamfundet i sin strävan att analysera den äldsta ljudhistorien ännu inte fullt ut har utnyttjat de möjligheter som historisk-komparativ metod och speciellt intern rekonstruktion (härefter samlat under begreppet ”rekonstruktiv metodologi”) liksom också teoretisk fonologi kan erbjuda, och att denna underlåtenhet inte helt står i proportion till den mer betydande forskning som lagts ner på att uttyda runinskrifter. Den runologiska forskningen har varit viktig för en ungefärlig tidsbestämning av synkope (Riad 1992: 108–109; 113–114) men har för övrigt kunnat bidra mindre till vår förståelse av de mest intrikata problemställningarna som gäller vokalkvaliteter och omljudet. Michael

Schultes (1998) ansats innehåller säkert många riktiga insikter men helhetslösningen som baseras på dem har jag underkastat kritisk granskning ([P4]: subs. 7.2).



Figur 4. Periodisering av förlitterär skandinaviska belyst med ett möjligt släktträd.

En problematisk men nödvändig förutsättning för att tillförlitligt anlita historisk-komparativ metod är att förstå rätt det nordgermanska släktträdet, inbegripet t.ex. forngutniskans ställning i det. Utan den förutsättningen blir resonemanget lätt cirkulärt då outtalade antaganden om de olika ljudutvecklingarnas riktning och relativa kronologi är svåra att hålla isär från analysens resultat. Tyvärr finns det inte full klarhet i exakt hur forngutniska är släkt med fornskandinaviska (vare sig det gäller de västliga norröna målen eller de östliga dansk-svenska målen) eller hur representativa de första nedtecknade östskandinaviska målen är för Älvdalskan, övriga Ovansiljanmål och sådana senare belagda bygdemål, vilka uppvisar tecken på förhistoriska novationer av betydande ålder. Oklarheter av det här slaget gör det vanskligt att arbeta med historisk-komparativ metod för att fastslå exakt när ett enhetligt nordgermanskt urspråk först har delats upp, exakt vilka urnordiska språkförändringar som hade hunnit verka före den uppbrytningen och vilka ljudutvecklingar som skett efter detta. Därför stöder sig uppsatserna relativt sett mer på intern rekonstruktion än på historisk-komparativ metod. För intern rekonstruktion söks stöd i teoretiska fonologiska grundantaganden.

Det är dessutom min bedömning att lånordsevidensen ännu står för ett mått av outnyttjad potential. Även om de flesta låneetymologierna torde vara identifierade finns det ännu luckor i vår förståelse av hur skandinaviska vokalkvaliteter har ersatts

med fenniska vokaler. Man kunde här jämföra med det arbete som snart i hundra år har gjorts inomspråkligt för att skilja på ytplanets fonetik och på kontrastiv fonologi. Också vad gäller lånordsforskningen måste vi, i stället för att fokusera på fonetiska korrelationer mellan antagna forna akustiska och artikulatoriska klangfärger, analysera och förstå respektive strukturer i långivarspråkets och låntagarspråkets vokalsystem och fonotax, och de relativa lagbundenheter som präglat substitutionsvanorna. De etymologiska ordböckerna och handböckerna är här inte på ett adekvat sätt uppdaterade (se slutnot [i]). I den här avhandlingen görs försök att nå de östskandinaviska vokalkvaliteterna med tillhjälp av lånord i fenniska språk.

Samtidigt som avhandlingen försöker överbrygga en lucka mellan nordistik och germanistik försöker den också sammanföra diskussioner angående omljud och synkope förda av nordister med diskussioner om samma problematik förda av teoretiska fonologer. Min bedömning är att efter vissa viktiga bidrag som gjordes under de första efterkrigstida decennierna (se översikt i Hreinn Benediktsson 1982), inklusive polemiken utlöst av Elmer H. Antonsens (1967, 1972) forskning (King 1972; Hreinn Benediktsson 1974) så har diskussionen delvis drivit isär. Nordamerikanska teoretiska fonologer har i varierande grad upphört att hänvisa till nordisters mer empiriska omljudsforskning, som är baserad på bred användning av data, traditionell diakron beskrivning och strukturalistisk teori och ofta publicerad på skandinaviska språk. Det är också mycket ovisst om merparten av nordister är fullt medvetna om alla de mer teoriberoende och i datahänseende mer snävt avgränsade bidragen från Nordamerika, skrivna mot bakgrund av en generativ forskningstradition med tillämpning t.ex. av lexikalisk fonologi och optimalitetsteori.

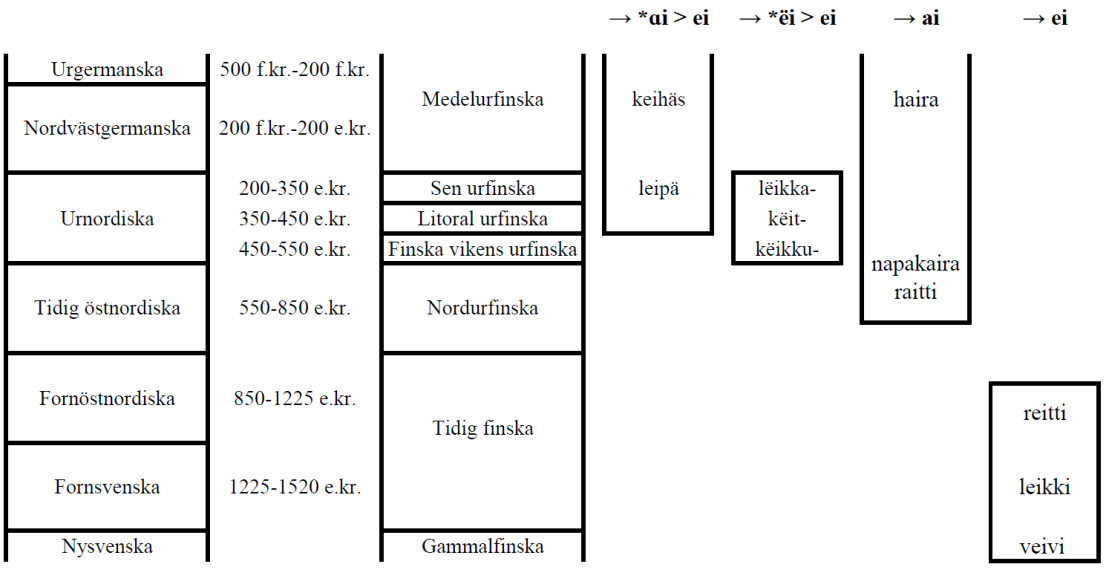
III. Uppsatserna och deras resultat

III.a. Uppsats [P1]

Uppsatsen [P1] ”Östskandinavisk utveckling av den urnordiska *ai*-diftongen och palatalt *r* i ljuset av finska ljudsubstitutioner” granskar systematiskt ljudsubstitutioner i sådana lånade fenniska appellativer som reflekterar en efterföljare till den urnordiska diftongen *ai*. Den fristående uppsatsen är publicerad i den fackgranskade konferenspublikationen ”Studier i svensk språkhistoria 13: Historia och språkhistoria”. I uppsatsen diskuteras kriterierna för att uppdaga de substitutionsmönster eller -vanor som användes liksom den kronologi som gällde deras uppkomst och när de föll ur bruk. Uppsatsen indikerar möjliga följder av analysen för vår förståelse av tidig östskandinavisk fonologi.

Ett syfte med uppsatsen är att, såvida det är möjligt, urskilja regelbundenheter i de korrelationer mellan diftongerna som i LägLoS framställs som oregelbundna. För att uppnå detta beaktas en preciserad beskrivning av urfinskans vokalsystem som innehåller protovokalen */ë/~[ɤ̯]. Detta görs i enlighet med en rekonstruktion som under

senare år är föreslagen av Petri Kallio (2014:160–161) och utvecklas genom en rekonstruktion av en diftong **ëi* ~[ɤi]. Figur 5 illustrerar till höger korrelationer av diftonger i de fenniska och skandinaviska ordförråden och den ungefärliga åldern av de lån som är representerade i korrelationerna. Till vänster är de aktuella urspråken inordnade på parallella tidsaxlar så som de gestaltas i [P1]. Märk väl att ljudsubstitutionen i *keihäs* och *leipä* är densamma som i *haira*, *napakaira* och *raitti* men korrelationen är en annan p.g.a. en ljudutveckling i Finska vikens urfinska.



Figur 5. Gruppering av korrelationer bland fenniska och skandinaviska diftonger med bedömning av när substitutionsvanorna ungefärligen har varit produktiva enligt [P1].

Slutsatserna är mycket försiktigt formulerade. Den stora osäkerhetsmarginal som det bevarade materialet förutsätter kan ses som ett resultat i sig självt. Substitutionsvanorna kan inte inordnas på en enkel tidslinje där bara en enda vana skulle ha varit produktiv vid ett givet ögonblick. Icke desto mindre är det i uppsatsen möjligt att visa att det inte är nödvändigt att anta en substitution av urn. *ai* med urfi. **ei*, vilket inte heller a priori ter sig som en plausibel substitution. Däremot framgår det att alla ord med en urfi. diftong **ëi* som kan rekonstrueras till det urfi. ordförrådet har urn. Låneoriginal med **ai*, och att deras inlåning, inte minst p.g.a. ordens vida distribution, torde vara klart tidigare än den egentliga omljudstiden. Slutligen är det inte möjligt att utesluta att nordurfinskt **ai* kunde ha ersatt ett något frontat skandinaviskt **äi* i ett övergångsspråk från omljudstiden. Resultatet gällande ”palatalt *r*” har redan presenterats i avsnitt I. (ovan).

III.b. Uppsats [P2]

Uppsats [P2] har rubriken ”Scandinavian-Finnish Language Contact in the Viking Age in the Light of Borrowed Names”. Den utgör ett självständigt integrerat kapitel i en fackgranskad slutrapport för ett projekt om Finlands vikingatid, ”Fibula Fabula Fact – The Viking Age in Finland”. Mitt kapitel i volymen behandlar ortnamn i dagens södra Finland med etymologier som har påståtts vara lån mellan förlitterär finska och skandinaviskt språk från vikingatid i vid bemärkelse, eller något tidigare.

Uppsatsen har ett antal syften, alla anpassade till dess karaktär som ett kapitel i en tvärdisciplinär volym. Ett syfte är att ge en trogen och balanserad bild av forskningsläget om tidiga finska och svenska etymologier för lånade ortnamn i området och att bedöma vilken sorts eventuella slutsatser som kan dras angående den dåtida språkkontaktens beskaffenhet. En annan målsättning är att introducera forskare från andra discipliner i specifika problem som typiskt gäller forskning i äldre ortnamn, med ett delmål att klargöra hur etymologiska resonemang kan underbyggas. Ytterligare, och kanske mest relevant för avhandlingens överordnade ändamål, är avsikten att främja forskningen på området genom att granska, förbättra och utveckla några i sammanhanget centrala etymologier. Detta innehåller en strävan att kritiskt skärskåda bedömningar och påståenden i nyligen utkomna handböcker (FSB; SPK). Av den orsaken fokuserar uppsatsen något selektivt på ett begränsat urval av fallstudier, där kritiska följddiskussioner bedöms vara nödvändiga. Sådana etymologiska fallstudier inbegriper namnen fi. *Köyliö* ~ medelt. fi. *Kiulo* ~ sv. *Kjulo*, östskandinaviskt **Tafæistaland*, sv. *Karis* ~ fi. *Karja(h)a-* ~? fvn. *Herdalar*, gammalfi. *Ahuen maa* ~ fsv. *Alandh*, medelt. fi. **Roo𝔶𝔶i* (?<**Roocci*) ’svensk osv.’ ~ fsv. *Rōþ-* vid sidan av fsv. *Rȳtzȩr* ’ryss’, och dessutom namnen upptagna i annexet till Codex ex-Holmensis A 41, allmänt kallat det ”Danska itinerariet”. Som stöd för behandlingen redovisar också uppsatsen för sina utgångsantaganden om vilka fonologiska lagbundenheter som kan antas styra ljudutvecklingar i ortnamn och hur avvikelser från ljudutvecklingar i appellativ kan förklaras.

Projektets ledande författare och redaktörer anser att vikingatiden i östersjöområdets östra delar bör anses omspänna 750 till 1250 e.Kr. Argumenteringen för dessa okonventionella och anmärkningsvärt åtskilda gränsvärden är av mångdisciplinärt slag. Den breda avgränsningen är av oansenlig betydelse för min uppsats, men vidgar förstås tidsmässigt betydelsen av ”Viking Age” i överskriften, en period som jag dessutom överskrider genom att ta upp potentiellt äldre namn; även med denna vida tidsavgränsning kan man ofta inte i finländska förhållanden med ortnamnsforskningens metoder och material ens nå tidsbestämningar med en precision om 500 år.

III.c. Uppsats [P3]

Uppsats [P3] bär rubriken ”Toponymy and Seafaring, Indications and Implications of Navigation along the Åland Islands”. Den publicerades som ett självständigt kapitel i en slutrapport för ett projekt om Ålands vikingatid. Volymen bär namnet ”The Viking Age in Åland – Insights into Identity and Remnants of Culture”. Mitt kapitel behandlar några av de potentiellt äldsta ortnamnen utmed sjölederna i dagens Åland, med det uttalade målet att datera dem och att placera dem i en kontext. Fonologiska resonemang är i en nyckelroll. Uppsatsen rekapitulerar ett känt verk av Hellberg (1987) och argumenterar för hans syn att de äldsta namnen i Ålandsarkipelagen kan tillhöra ett fåtaligt skikt av sjöfartsnamn, vars datering rimligen kunde sammanställas med vikingatidens österled.

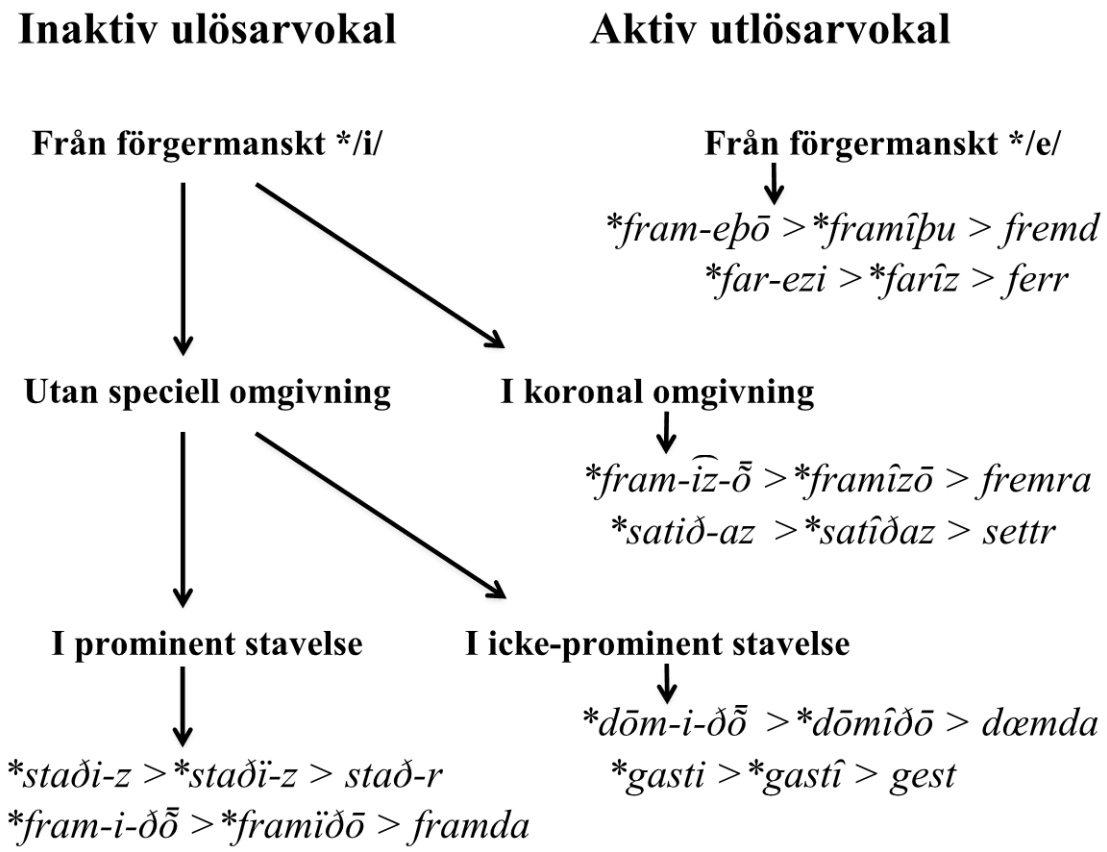
Bland namn som behandlas kan nämnas *Eckerö*, *Geta*, *Jomala* och *Lemland*, vid sidan av *Järsö*, *Skedholm*, *Styrsö* och *Slemmern*, liksom *Lemböte* och de övriga åländska namnen i det Danska itinerariet. Kapitlet fördjupar också diskussionen i uppsats [P2] om de allra äldsta förhistoriska alternativen för en etymologi av namnen *Åland* och *Ahvenanmaa*. Detta avspeglar en utveckling av min analys sedan 2012 då manuskriptet för [P2] lämnades in. En ny möjlighet lyfts fram för att placera namnet *Åland* i den relativt sena kontexten av vikingatida sjöfartsnamn. I uppsatsen behandlas också de fornvästnordiska appellativen m. *vikingr* och f. *viking*, och låneetymologin för fi. *reitti* ’rutt’, alla ord som rimligen hör hemma i samma historiska sammanhang som de diskuterade ortnamnen. En viktig implikation för avhandlingens historiska syntes är att det här föreligger en naturlig vikingatida kontext för att anta språkkontakt mellan finskt och östskandinaviskt språk före 1100-talets svenska bosättning i Finlands kustbygder.

III.d. Uppsats [P4]

Uppsatsen [P4] rubriceras ”Scandinavian Front Umlaut Revisited and Revised”. Den granskar kritiskt forskningsläget angående *i*-omljudet och ådagalägger de påtagliga bristerna i ansatserna att förklara frontningens distribution i ordförrådet som är gjorda under senare år. Särskilt beskrivs, kritiseras och omkonfigureras den nästan kanoniskt etablerade problemställningen, som är ett arv från Axel Kocks (1911–1916) klassiska, inadekvata och föråldrade treperiodteori. Uppsatsens huvudmål är att redogöra och argumentera för en helt nydanande lösningsmodell, som kan redovisa för distributionen av frontning i det skandinaviska ordförrådet och förklara under vilka villkor det första fonologiska skedet av denna ljudförändring skedde, och som en följd av detta också dess förhållande till senare analogibildningar och morfologiska generaliseringar. Ett ytterligare syfte är att visa att den presenterade lösningen erbjuder den mest ekonomiska förklaringen i jämförelse med andra föreslagna lösningar.

Uppmärksamhet riktas på oväntade utfall som verkar stå i konflikt med de allmänt accepterade regelbundenheterna. Särskilt utvecklas de utmaningar som *iʀ*-omljudet

medför till en slags lackmustest, genom vilket de existerande hypoteserna befinns komma till korta. Ett i grunden nytt förslag läggs fram, baserat på ett antagande att kontrast mellan respektive efterföljare till förgermanskt */e/ och förgermanskt */i/ upprätthölls i prominenta stavelser under hela omljudsperioden, t.o.m. efter att efterföljarna till förgermanskt */e/ hade undergått höjningsomljud. För att illustrera den nya lösningen används en uppsättning avledningar från samma rot med subminimala skillnader, nämligen f. nom. sg. urn. **framîþu* > fvn. *fremd* 'prominens, framstående ställning' och f. nom. sg. urn. **framîzō* > fvn. *fremra* 'den främre', båda med *i*-omljud, vilka tillsammans står i motsats till 1:a pers. sg. preteritum urn. **framïðō* > fvn. *framda* 'utförde, främjade' utan *i*-omljud (jfr figur 2 i avsnitt I. ovan).



Figur 6. Utvecklingen av förgermanskt */e/ och */i/ i utlösarposition för omljud.

Den enda lösningen som visar sig hållbar är att de palatala utlösarvokalerna inte var identiska, utan bestod av två skilda fonem. Fonemens kontrast hade sitt ursprung i en skillnad mellan förgermanskt */e/ och förgermanskt */i/. Suffix och ändelser som innehåller efterföljare till förgermanskt */e/ utlöser alltid omljud, medan efterföljare till förgermanskt */i/ gör det enligt lagbundenheter som går att beskriva utifrån den fonologiska kontexten (figur 6). Hypotesen är att förgermanskt */e/ i en prominent prosodisk miljö har utvecklats till koronala vokaler betecknade **ê* och **î* medan förgermanskt */i/ under samma betingelser genom en kedjeförskjutning har utvecklats till en orundad dorsal vokal som jag betecknar **ï*. Skillnaderna i frontning fram-

träder bara då omljudet verkat på lätt rotstavelse därför att utlösarvokalen bara efter en sådan stavelse står i relativt prominent ställning innanför den huvudbetonade bimoraiska foten och därför har utvecklats lika som vokaler under huvudtryck. Efter tung rotstavelse står utlösarvokalen i en icke-prominent position och tillhör ett enklare vokalsystem som inte alls innehåller den orundade dorsalvokalen **ï*. Medan *i*-stammarna innehåller ett etymologiskt */i/ innehåller dåtidsformerna av svaga verb en efterföljare till ett förgermanskt */j/ som vokaliserats så tidigt att det kommit att delta i kedjeförskjutningen.

På basis av omljudsanalysen kan man också sluta sig till ett prominenssystem som förklarar omljudseffekten av långa utlösarvokaler, nämligen ett system där de stavelser som står utanför den huvudbetonade foten får sin prominens bestämd av vartannat viktbärande segment eller ”mora”, räknat från höger till vänster. Systemet, som är härlett ur omljudet, förutsäger också korrekt den relativa kronologin för synkope. I sista avsnittet granskas noga logiken i några moderna försök att förklara omljudets frånvaro med att det skulle ha gått tillbaka genom s.k. ”omljudsväxling” (dvs. ”umlaut reversion”) i vissa fonologiska eller morfologiska miljöer efter att först ha realiserats allofoniskt i alla stavelsetyper. Speciellt noga kritiseras förklaringarnas ekonomi och logik i de genomarbetade förslagen av Michael Schulte (1998) samt av Gregory K. Iverson och Joseph Salmons (2004, 2012).

Uppsatsen har publicerats i Arkiv för nordisk filologi 132, 2017. I avhandlingens kontext tjänar uppsats [P4] väl som en introduktion till uppsats [P5].

III.e. Uppsats [P5]

Uppsatsen [P5] bär överskriften ”Scandinavian umlaut and contrastive feature hierarchies”. Det överordnade syftet är att eftersträva en hållbar diakronisk fonologisk analys av de nordiska förlitterära omljuds- och brytningsprocesserna, som har räknats upp i anslutning till Figur 1 i delavsnitt I.c. ovan. Ett problem som granskas är om vokaliskt framkallad brytning, frontningsomljud och rundningsomljud kan analyseras tillsammans inom ett enda följdriktigt ramverk av ursprungligen enhetlig metafonisk regressiv vokalpåverkan. En specifik strävan är att förklara de svårbegripliga anomalier som uppfattas förekomma i de tre nämnda kategorierna av omljud när en utlösarvokal i en kort andra stavelse har efterföljt en kort huvudbetonad stavelse, ett förhållande som inbegriper den beryktade frånvaron av *i*-omljud i lätta rotstavelser.

Uppsatsen [P5] bygger på en förvald teoretisk grundval som utgörs av ”Contrastive Hierarchy Theory” (dvs. ”teorin om hierarkier för kontrastiva särdrag”). På det sätt som förklarats i avsnitt I (ovan) rekonstrueras omljudstidens protovokaler med utgångspunkt i deras omljudseffekt och inte vice versa som är mer brukligt. För särdragens del antas att vokaler gärna kan antas vara underspecificerade medan särdragen måste kunnas uppställas i en binär (+/–) hierarki. För omljudens del antas att särdrag ohindrat sprids om målfonemet är underspecificerat (jfr ”feature-filling” i Bale et al. 2014) medan frånvaron av omljud kan förklaras av att målfonemet redan är speci-

ficerat för motsatt kontrastivt värde och därmed är oemottagligt för spridning av särdrag (”feature-spreading”).

Som redan konstaterats i delavsnitt III.d. (ovan) leder detta till en rekonstruktion av två olika vokalsystem som förekommer i respektive prominenta och icke-prominenta stavelser, liksom till metriska regler som bestämmer vilka stavelser som är prominenta. Rekonstruktionen kontrolleras i efterhand med att den motsvarar de regler som styr synkope av vokaler i icke-prominenta stavelser. Dessutom rekonstrueras en relativ kronologi som beskriver i vilken ordning omljudsvokalerna har blivit fonemiska i det övergångsnordiska vokalsystemet. För att spåra framskridandet av omljud under den övergångsnordiska perioden används och problematiseras några lånord i fenniska som verkar härröra från omljudstiden, nämligen: **olut*, **rohkeda* och **kari*. Empiriskt stöd söks också i norröna ortnamn (Widmark 1991:11–88).

Uppställning 1. Korrelationer mellan stavelsekvantitet och omljud, ett urval

	Utlösarvokal i kort stavelse efter en kort första stavelse	Utlösarvokal efter en lång första stavelse
Frontnings-omljud	**sta.ði-* > *stað-* ’ställe’ **ta.li.ðō* > *talða* ’förtalte, räknade’	**gas.ti-* > *gest-* ’gäst’ **dō.mi.ðō* > *dœmda* ’dömde’
Brytning	**e.ƀa* > fvn. *ef* ~ fsv. *iæf* ’jäv’	**der.ƀa* > *djarf-* ’djärv’
Rundingsomljud	**me.luk-* > fsv. *miolk-* ’mjölk’	**feþ.ru* > fsv. *fiæþer* ’fjäder’

Som synes av figur 3 i delavsnitt I.c. ovan leder allt detta till en rekonstruktion av vokalsystem där rundning äldst har använts kontrastivt bara för dorsala (”icke-koronala”) vokaler i prominenta stavelser och för halvvokaler. Detta förklarar en skillnad mellan ett ursprungligt mer universellt rundningsomljud som fick ett liknande utfall i både öst- och västskandinaviska, som i *trygg-* (med *w*-omljud) och *mjolk*, och därtill ett senare rundningsomljud på låga vokaler som mestadels gått tillbaka i östskandinaviska, som i *fjäder* och *tjära* < **ter(w)ōn-* (med tidigt *w*-bortfall framför bakvokal). De två klassiska brytningsteorierna ges båda delvis rätt. Epentesteorin som förutsätter att en metafonisk brytning samverkade med ett rundningsomljud gäller för det äldre rundningsomljudet medan ”brytning-rundning-teorin” som förutsätter att brytningen fullbordats innan rundningen satt in, gäller för det yngre rundningsomljudet.

Kända stötestenar i nordisk vokalhistoria som alla förklaras följdenligt utifrån den nya enhetliga analysen av vokalhistorien i [P5] omfattar följande (referenser till [P5] om inte annat anges):

- Pannordisk frånvaro av *u*-omljud på kort och långt **i* (subs. 4.1 & 4.3, jfr Rischel 2008:222),
- Fördelningen av *u*- och *w*-omljud i rotstavelser som samtidigt genomgått brytning (subs. 4.1, 4.2, 4.3 & 6.6, jfr Hreinn Benediktsson 1963),
- Västnordisk frånvaro av *a*-brytning men inte *u*- eller *ō*-brytning i kort rotstavelse (subs. 4.4.2, jfr Hreinn Benediktsson 1982:41–55),
- Östnordisk frånvaro av *w*-omljud på en palatal vokal som härstammar från förgermanskt */i/, som i de svenska exemplen *eder* ~fvn. *yðr* och *näcken* (< fsv. *nekẹr*) ~fvn. *nykr* (subs. 4.5),
- Frånvaron av *i*-omljud i vissa men inte all korta rotstavelser, inbegripet problemet med *iʀ*-omljud och växlingen i fvn. sg. *ketill* 'kittel'/pl. *katlar* (Section 5, jfr [P4]),
- Vitt spridd (dock inte fornisländsk) brytning (som i *skjorta*) av frontat *-u-* mellan förställt *g-*/*k-* och efterställt *-r-* (subs. 6.2.4, jfr Wessén 1968 [1941]:§33),
- I nära anslutning till föregående punkt, växlingen mellan brutna och obrutna vokaler i paradigmet *göra*/*gör*/*gjorde* (subs. 6.2.4, jfr Widmark 2010:87f),
- Kombinerat frontnings- och rundningsomljud (som i fem. *øx* 'yxa' < **akwesi*) och omljud från tredje stavelsen, som i neut. *øðli*/*eðli* 'karaktär' < **aðulija* (subs. 6.4.2 & 6.4.3, jfr Skomedal 1980:134 och Schulte 1998:223–229),
- Frånvaron av höjningsomljud i vissa presens av 4:e och 5:e klassen av starka verb, exemplifierat av fvn. *etr* 'äter', *berr* 'bär' och *gefr* 'ger' (subs. 6.4.2 fotnot 71),
- Spår av rundningsomljud i preteritum av 7:e klassens starka (reduplicerande) verb, som i 3:e pers. pl. *søru* '(de) sådde' och fsv. 3:e pers. pl. *fiøllo* '(de) föll' (subs. 6.4.3 fotnot 57 & 59, jfr Noreen 1923 [1884]:§ 77.3, § 504 anm.1; 1904:§ 543; Widmark 1991:140),
- Kursoriskt och preliminärt: uppkomsten av vokalharmoni i fornnorskan (subs. 6.6).

Analysen åtföljs av en förståelse om omljudsvokalernas s.k. fonologisering, som innefattar tre stadier av postkontrastivt (eller "postlexikalt", "subfonematiskt" eller "kontextberoende/positionellt förutsägbart") omljud innan omljudsvokalen blev kontrastiv (dvs. självständigt "underliggande", "fonematisk" eller "lexikal" i grammatiken). Dilemmat hör ihop med frågan ifall synkopen och omljudet stod i ett direkt kausalt samband eller var mer indirekt två sidor av samma process (jfr Sigurd 1961), eller bara av en händelse råkade äga rum under samma tidsperiod. Saken är av utrymmesbrist kortfattat beskriven på s. 225 i uppsats [P5] men utvecklad i kappans delavsnitt 4.1 nedan.

I det första skedet handlade omljudet om en anticipatorisk *fonetisk anpassning*, som berodde på en *tendens att underlätta* uttalet under inflytande av en påföljande *tydlig* utlösarvokaloid (vokal eller halvvokal) inom samma fras. Tendensen att anpassa, som

torde ha varit långvarig och antagligen gemensam åtminstone för väst- och nordgermanska, var inte tillräckligt hörbar för att reflekteras i fenniska lånord eftersom språkbrukaren inte hade något motiv att framhäva den genom tydlig artikulation. I ett senare metafoniskt andra stadium var det däremot fråga om en *fonologisk modifiering* betingad av en regressiv grammatisk *regel* som i en del av ordförrådet var motiverad av ett kognitivt behov att *tydliggöra* kontrastiva egenskaper i vissa *svagt artikulerade* utlösarvokaler genom att sprida deras underliggande egenskaper till den föregående stavelsen. Övergången från första till andra stadiet berodde dels på en försvagad urskiljbarhet av en del utlösarvokaler och dels på en begynnande *a*-synkope, som tidigast drabbade ordslut. Detta antas i [P5] ha bidragit till tydligare gränser mellan prosodiska ord, vilket möjliggjorde en omtolkning av den fonetiska tendensen för fraser i den tidigaste fasen till att bli en fonologisk regel för lexem i andra fasen. Den typen av allofonisk modifiering borde ha varit tillräckligt hörbar för att kunna reflekteras i fenniska lånord eftersom regelns hela existensberättigande (i motsats till första skedets uttalsdrivna anpassning) uttryckligen förutsatte tydlighet.

I ett tredje skede blev modifieringen i föregående stavelse mer urskiljbar än dess utlösarvokals egenskaper, och kom därefter att föranleda, vid inlärning hos nästa generation av språkbrukare, en omtolkning som förutsatte en ny kontrastiv underliggande omljudsvokal. Omtolkningen drog med sig modifieringens alla förekomster i ordförrådet oberoende av om utlösarvokaloiden var försvagad och stod inför fullbordad synkopering eller inte. Därför inträdde omljud i former med kvarstående utlösarvokaloid, som t.ex. i övergångsnordiskt nom. pl. **gæstīz* ’gäster’, samtidigt med omljud i former med förlorad utlösarvokal, som i nom. sg. **gæstz* ’gäst’. Omljudet *berodde* alltså inte på synkope utan på en prosodisk försvagning av *en del* av utlösarvokaloiderna.

Det förhållandet att fenniska lånord i stort sett saknar spår av allofoniskt omljud i rotvokalen är som sagt anmärkningsvärt. En bidragande orsak till detta kan vara att de andra och tredje stadierna av allofoniskt omljud blev snabbt övergående eftersom de utgjorde stadier i en självförstärkande accelererande utvecklingsprocess. I en stor del av ordförrådet stod uppkomsten av det fonologiskt betingade omljudet i ett interaktivt orsakssamband med en försvagning av en utlösarvokal, en interaktion som ytterst resulterade i utlösarvokalens bortfall. Själva övergången från fonetisk till fonologisk regel, som sammanföll med begynnande *a*-synkope, berodde på samma försvagning av utlösarvokaler som kort därpå förorsakade omljudsvokalernas fonologisering. Denna fonologisering förde i sin tur med sig att utlösarvokalers fonologiska specifikationer blev redundanta och utan förlust av ordets särskiljande informationsinnehåll därför gick förlorade vid språkinlärning. Detta skulle ha inneburit att den underliggande vokalen eventuellt i ett sista övergångsskede före synkopen saknade specificering för kontrastiva särdrag. En sådan vokal, tom på informationsinnehåll, skulle inte längre stå emot synkope, dvs. ett totalt bortfall och en ny avstavning.

Förenklat kan man alltså beskriva de kausala sambanden så att prosodisk vokalförsvagning förorsakade omljud (jfr Schulte 1998) medan omljudet förorsakade en fono-

logisk omtolkning av den försvagade vokalen på så sätt att det resterande hindret eliminerades för att vokalförsvagningen kunde fullbordas genom bortfall. Ytterst hade både omljudet och det strax påföljande vokalbortfallet samma yttre orsak: en framskridande vokalförsvagning. Till den del som omljud och synkope hade ett samband var det synkopen som berodde på omljudet, inte vice versa såsom Kock (1911–16) och även allmänt hans samtida kolleger föreställde sig.

Uppsatsen [P5] har publicerats i North-Western European Language Evolution 70:2 i september 2017.

IV. Om möjligheterna att syntetisera resultat

Det är tydligt, inte minst i min analys i uppsats [P5], att språket förändrade sig relativt långsamt fram till 400-talets slut, efter vilket en exceptionellt snabb utveckling tog vid. Den blev anmärkningsvärt enhetlig för nästan hela Skandinavien men lämnade i synnerhet gutniskan och åtminstone en del mål i Dalarna på var sina stickspår. Olikheten i dessa randområden gällde en tidig backning av koronala rotvokaler, vilken gjorde dem kontrastiva gentemot /u/ genom icke-rundning och därigenom oemottagliga för rundningsomljud, som t.ex. i *sing(w)ã* ’sjunga’ (se [P5]: subs. 4.3.2 not 34). I och med att alla andra nordiska språk har undgått denna innovation som förenar gutniska och älvdalska, verkar de senare kunna vara genetiskt närmare släkt sinsemellan än med de skandinaviska fornspråken. Denna preliminära observation står åtminstone inte i konflikt med det som vissa andra ljudhistoriker nyligen har föreslagit (t.ex. Kroonen 2012) men jag har inte haft utrymme att problematisera detta i artiklarna; det är inte heller helt uteslutet att liknande resonemang kunde gälla andra lokala skandinaviska mål i Sverige eller Norge. Detta synsätt skulle ändå, om det visar sig korrekt, förstärka bilden av att de expansiva högprestigedialekterna under omljudstiden, som i så fall skulle ha trängt in över Västergötland till östra Sverige, hade förmågan att spridas snabbt över mycket stora områden.

Helt nya rön ingår dessutom i den ljudhistoriska analysen i uppsats [P5] som beskriver hur särdragen var hierarkiskt organiserade under omljudstiden och hur hierarkierna förändrades, tidigare i väster än i öster. Denna analys möjliggör t.ex. en förklaring av *r*-brytning (se [P5]: subs. 6.2.4), av hur *a*-brytning ofta uteblev i västnordiska (se [P5]: subs. 4.4) och av hur dubbelomljudda vokaler lätt tappade sin rundning (subs. 6.4.3 not 74). Enligt den analysen spred sig en del urnordiska novationer på (400-)500-talet expansivt från väst (läs Norge) både mot Danmark och ända till Mellansverige och svenska östkusten (se MAP 6 i kappans delavsnitt 4.3 och jämför med utgångsläget i MAP 1 i delavsnitt 1.2, båda nedan). Detta resultat har uppnåtts på helt teoretisk grund med rekonstruktiv fonologisk metod innan jag blev bekant med en arkeologs hypotes om ett slags socioekonomisk kollaps föranledd av klimatkatastrofen med början 536 e.Kr., en hypotes som också är förenlig med ett påföljande inflöde av västliga intryck (Löwenborg 2012).

Detta scenario ökar sannolikheten att fenniska språk ännu före 500-talet e.Kr. kan ha lånat från dåvarande kustdialekter som var närmare släkt med forngutniskans och älvdalskans föregångare än med fornsvenskans. En heltäckande diakron analys av forngutniskans och älvdalsmålets vokalsystem med tillhjälp av teorin om hierarkier för kontrastiva särdrag kunde eventuellt öppna för nya perspektiv men i det här skedet har det inte varit möjligt att fullfölja denna forskningslinje.

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[i] Många av de klassiska bäst kända exemplen är inga undantag: T.ex. *joulu* ’jul’ är knappast ett sent lånord (DEO: s.v. ’jul’; AEW: s.v. ’jól’; LägLoS: s.v. ’juhla’). Trots att diftongen råkar låta som modern isländska återfinns inget helt passande östnordiskt ungt låneoriginal (jfr. berättigat tvivel i VAEO: s.v. ’jul’). Däremot stämmer etymologin på ett mycket äldre lån (← urg. **jeulō* eller urn. **jeulu*) med ersättning av en otillåten sekvens *+je-* med urf. **jo-* (Hirvonen 1997: 57–59), samt eventuell vokalharmonisk höjning av stamvokalen, som också skett t.ex. i *huilu* ’flöjt’← **swiglō*. För ytterligare ett exempel, jämför referensen i [P5] not 30 om ordet *olut* ’öl’ som ingalunda är urindoeuropeiskt, vilket påstås i VAEO (s.v. ’øl’).

Summarising chapter of the compilation thesis

1 Introduction

In this compilation thesis, an improved diachronic phonological understanding of pre-documentary (i.e. reconstructed and runic) Scandinavian language is pursued, with some particular considerations of its eastern vernaculars and their contact with Finnic. The five papers, [P1], [P2], [P3], [P4] and [P5], each with different aims and methodology, have been published in separate contexts and formats, for different purposes. This diversity is also accommodated in the inclusive title "Preliterary Scandinavian sound change viewed from the east: Umlaut remodelled and language contact revisited." Even so, all of the research in the papers is interrelated and has been crafted in a single and continuous creative process.

In [P1] sound substitutions are systematically examined in a clearly delimited problematic set of eastern Scandinavian appellatives borrowed in Finnic. In two more papers [P2] and [P3] some challenging toponymic etymologies are re-evaluated, many of which have been claimed to include borrowed naming elements. In two further papers [P4] and [P5] pre-documentary Scandinavian vowel history, which has been infamously poorly described, is revisited with an aim to present an adequate analysis. This is pursued mainly by means of reconstructive methodology and phonological theory, supported by some Finnic loanword evidence.

1.1 Research objectives

The time span is largely the same for all papers: approximately the millennium ending in the thirteenth century CE. The papers are categorised in three groups, to allow for a discussion of methodology and research context with a threefold rather than fivefold focus: papers [P2] and [P3] are discussed together and likewise [P4] and [P5]. The overarching purpose may likewise be condensed into three objectives:

First, the aim in [P1], partly in [P2] and [P5] and even to some extent in [P3], is to improve our understanding of language contact between pre-documentary eastern Scandinavian and Finnic/Early Finnish. The aspiration is to refine the description of the pertinent sound substitution practices and the chronologies involved.

Second, toponymic etymologies from the Scandinavian-Finnish language contact zone in present-day southern Finland are identified, appraised and at times amended in [P2] and [P3], with a view to further exemplify sound substitutions and shed light on the nature of contacts between language communities, including the time and space where such contacts may have occurred. The justification for the use of toponymic

evidence in this context is further discussed in subsection (hereafter, 'SUBS' when referring to the summarising chapter and 'subs.' to the papers) 3.4.3 below.

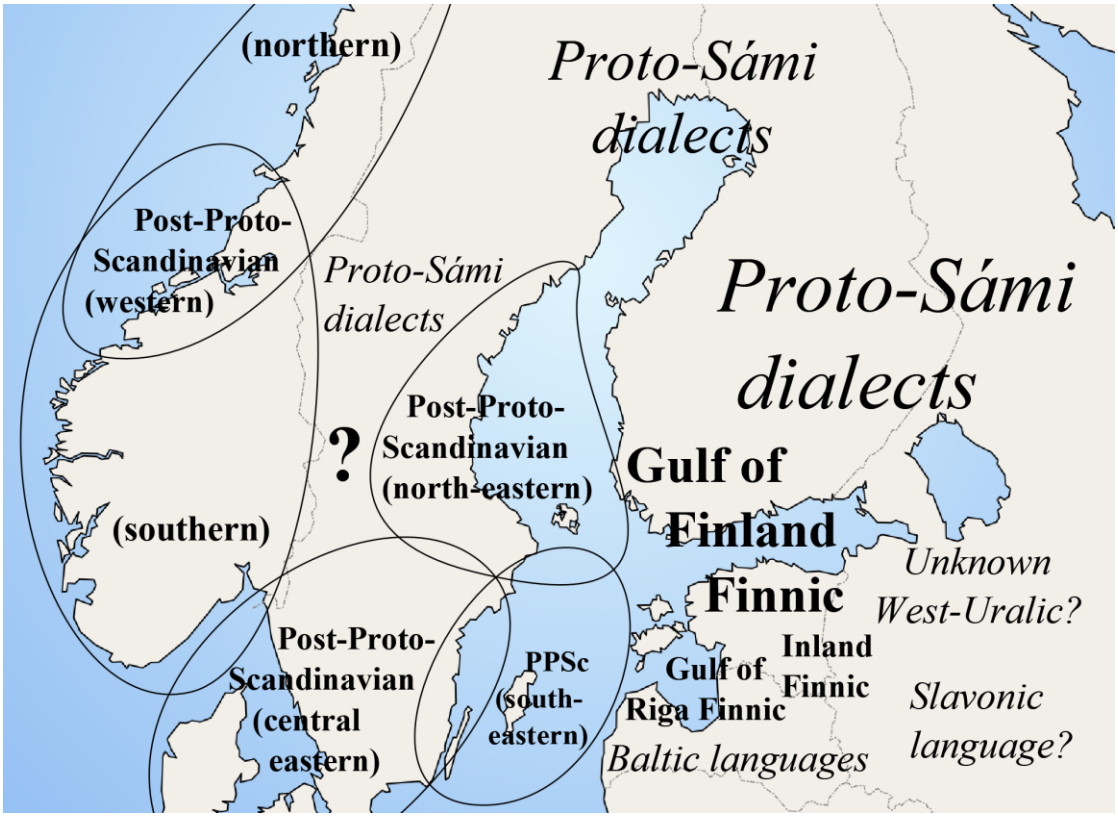
Last but certainly not least, the aim in [P1], [P4] and [P5] is to improve the reconstruction of pre-documentary Scandinavian sound systems and the analysis of sound change with a particular focus on vowels, including the use of Finnic loanword evidence, where it is pertinent.

All papers share a spatial and chronological framework and a focus on historical phonology. The methodological issues involved in the use of diverse and imperfect evidence is critically evaluated in pursuit of the objectives mentioned throughout. The overall objective is to fill a difficult knowledge gap concerning pre-documentary eastern Scandinavian diachronic phonology and language contact. Scandinavian-Sámi language contact, which is equally of great potential interest, is only sporadically considered.

1.2 Setting the scene

MAP 1 configures the Baltic Sea space in terms of speech communities and areas at the end of an era of intense borrowing from Proto-Scandinavian to Finnic. Soon after this a climate disaster impacted on social hierarchies and the Scandinavian languages underwent very rapid language change, impacting on their dialect geography.

Map 1. Estimated sites of Scandinavian speech communities around 500 CE



The map should not be understood to reflect the extensions of speech areas too precisely. The encirclements are approximate outer limits of core settlement zones that may be identified with the indicated vernaculars. The delineated areas should not, however, be understood to deny the presence of the indicated language forms outside these encirclements, or to be exclusive to the speech community indicated. Actual language distribution should more correctly be drawn with exclaves and enclaves and as mutually entangled strings of pearls. Many areas would also have been bilingual. Of course, such faithfulness would not have been visually easy to assimilate.

Furthermore, the map is not intended as a statement on disputed aspects of settlement. Instead, it illustrates that by the end of the period of intense borrowing from 'Proto-Scandinavian' ('PSc') and 'Post-Proto-Scandinavian' ('PPSc'), 'Late Proto-Finnic' ('LPFc') had already split into three closely related branches. It also gives a possible spatial interpretation to the conclusion in [P5], reflected by MAPS 2 and 6, suggesting that the ancestor of Övdalian (north-eastern PPSc) may have been more closely related to that of Gutnish (south-eastern PPSc) than to that of Old Swedish (central eastern PPSc), and that the ancestor of Old Swedish may have expanded northeastwards and absorbed some now extinct dialects after the period depicted here.

To understand what happened between the time shown by the map and the eleventh century, when 'Old Scandinavian' ('OSc') languages became described and codified, it must be conceived that contemporary attestations of pre-documentary Scandinavian were regrettably scarce and imprecise. This evaluation is valid even when considering the occurrence of runic inscriptions, especially as concerns the pre-Viking Age. There is in effect a paradox regarding our knowledge; while North Germanic universally falls within the category of early attested language families and is certainly among the most intensively explored and analysed, research has nevertheless critically failed to reconstruct the most fundamental elements of its vowel history.

The differences between the sound systems of OSc of the late Viking Age and the phonemes reconstructed for NwGmc are huge and arose over almost a millennium (200-1050 CE) of language change. While these extremes of the timeline are remarkably far apart, they can be accessed by means of reliable attstations or the comparative method, without having to apply internal reconstruction or runic interpretation. At the later end of the interval, the extraordinarily rich Old Norse literature coupled by ample attestations of closely related Scandinavian, that is, 'North Germanic', languages and dialects provides a good entry point for reconstructive efforts aimed at recovering the OSc of the Viking Age. At the early end of the interval, the abundance of documented medieval West Germanic languages provides plenty of comparative data to reconstruct their common ancestor, and by extension the ancestor common for them and North Germanic (denoted 'Northwest Germanic', 'NwGmc'), which in turn may be compared to the closely related and fortunately well-documented Gothic language (see FIGURE 1 in SUBS 2.1.2 below) in order to establish reconstructed 'Proto-Germanic' ('PGmc').

Table 1. Differences in periodisation by scholars, as interpreted by the author, with periods representing the transitional era in grey

<table>
<tr><th></th><th colspan="2">North American traditional</th><th colspan="4">Attempts towards more fine-tuned periodisation</th><th colspan="2">Danish/Swedish traditional</th></tr>
<tr><th>Approximate dates, CE</th><td>E. Haugen 1976</td><td>Voyles 1992</td><th>Grønvik 1998</th><th>Schalin [P4] [P5]</th><th>O. E. Haugen 2012</th><th>Rischel 2008</th><td>N. Å. Nielsen 1966; PEO = Katlev 2000</td><td>Wessén 1968[1941] (cf. Pettersson 2008)</td></tr>
<tr><td>ca. 200 - 300</td><td rowspan="4">Proto-Scandinavian</td><td rowspan="2">Early Northwest Germanic</td><td rowspan="2">Urnordisch</td><td rowspan="3">Proto-Scandinavian</td><td rowspan="3">eldre urnordisk</td><td rowspan="3">Early Ancient Nordic</td><td rowspan="6">urnordisk (Nielsen), fællesnordisk (PEO)</td><td rowspan="6">urnordiska</td></tr>
<tr><td>ca. 300 – 400</td></tr>
<tr><td>ca. 400 – 475</td><td rowspan="3">Proto Norse</td></tr>
<tr><td>ca. 475 – 525</td><td rowspan="2">Nachurnordisch I</td><td rowspan="3">Post-Proto-Scandinavian</td><td rowspan="4">yngre urnordisk</td><td rowspan="4">Late Ancient Nordic</td></tr>
<tr><td>ca. 500 – 550</td><td>Nachurnordisch IIa</td></tr>
<tr><td>ca. 525 – 575</td><td rowspan="4">Common Scandinavian</td><td rowspan="4">?</td><td>Nachurnordisch IIb</td><td rowspan="2">Transitional Scandinavian</td></tr>
<tr><td>ca. 550 – 700</td><td rowspan="3">Nachurnordisch III</td></tr>
<tr><td>ca. 700 - 800/850</td><td rowspan="2">Ancient Scandinavian</td><td rowspan="3">eldre norrønt</td><td rowspan="5">Old Nordic</td></tr>
<tr><td>ca. 800/850 - 1050/1100</td><td rowspan="3">Sprachstufe IV</td><td rowspan="3">Old Scandinavian</td><td>olddansk (Nielsen also "runedansk")</td><td rowspan="2">runsvenska</td></tr>
<tr><td>ca. 1050/1100 - 1225</td><td rowspan="2">Old Scandinavian</td><td rowspan="2">Old Icelandic</td><td rowspan="2">yngre norrønt</td><td>Nielsen: gammeldansk</td></tr>
<tr><td>ca. 1225 - 1350/1375</td><td>PEO: ældre middeldansk</td><td>klassisk fornsvenska</td></tr>
</table>

The middle column represents a periodisation arrived at by the author in [P4] and [P5]. Its chronology is primarily relative and its absolute dates are indicative. It serves here as a reference timeline to compare the periodisations of other authors. For full details, see the primary sources.

The problem is thus constituted by an unfortunate knowledge gap concerning an interval on the timeline, where there are few reliable means of recovering knowledge of the sound system and when change was also rapid and reformative. While atomistic sound laws account reasonably well for how PGmc forms of departure and attested OSc terminal forms correlate, almost every phonological aspect of vowel change in between those states is disputed. Embarrassingly for the discipline, this dissent includes the very basics of analysis, both in theoretical and descriptive terms.

The problem is most difficult within a critical interval lasting for 250 years between the late fifth and early eighth centuries, during which the number of vowels was roughly doubled through a set of regressive metaphonic remote assimilation phenomena, here named rounding umlaut, breaking and front umlaut. It is not a coincidence or mere matter of terminology that no common periodisation convention exists for the poorly known era of Scandinavian language development, since these umlaut phenomena have not been described or understood at all well and they continue to defy efforts to establish a chronological consensus. Despite their highly peculiar mutual similarities, these phenomena are also very difficult to explain as a unified and phonologically coherent continuum of processes, either logically or chronologically.

The lack of consensus on periodisation is illustrated in TABLE 1. The respective period(s) which I deem here to be most relevant to the transition from Proto- to Old Scandinavian are shaded in grey in the table. The transitional era, approximately 500-850 CE, has been treated especially incoherently.[1] The old neogrammarian research tradition is best preserved in the eastern handbooks represented in the right-hand columns, where "urnordiska" is still used in a very wide sense, almost completely covering the transitional era, up until 800 CE. Odd Einar Haugen and Jørgen Rischel have fine-tuned this tradition and introduced a "younger" ("yngre") Proto-Nordic and "Late" Ancient Nordic (similarly in Tikrit & Voeltzel 2015: 60) respectively for the sixth and seventh centuries. In the North American tradition represented by Einar Haugen and Joseph Voyles in the left-hand columns, the transitional period has conversely been extended to the eleventh century, and the former has coined it "Common Scandinavian". In TABLE 1 the names of the periods are faithfully recorded while some of the absolute dates and precise transitions from one era to another are hard to infer from some of the presentations. Therefore TABLE 1 does not do proper justice to all the sources and is merely intended to outline the problem.

[1] In this thesis references to the 'transitional era' have somewhat different scopes depending on the context. The beginning is approximately dated to 500 CE since more precision is attained only for relative chronologies. Most structural changes in vowel contrast would have been completed within the early syncope era lasting for some two centuries. Yet in a wider sense the 'transitional era' continued until all vowel reduction had progressed to the stage known from attested Old Scandinavian, no earlier than 850 CE.

There are hundreds of Finnic loanwords from Germanic and Scandinavian. The fact that they were borrowed immediately before as well as soon after the era of productive Scandinavian umlaut makes it highly probable that this borrowing would have continued during its progression. The northern dialect of Proto-Finnic that was spoken around the Gulf of Finland and the Finnish west coast in the early Scandinavian umlaut period was rich in vowels and diphthongs (Kallio 2016: 40). The short vowels amounted to nine, divided by autosegmental front/back vowel harmony into the front vowels **ü, *ö, *ä, *e*, the corresponding back vowels **u, *o, *a, *ë*, and one vowel **i*, which was indifferent or neutral vis-à-vis the autosegmental front/back harmony.[2] These were matched by nine long vowels with the same respective qualities. Numerous diphthongs existed, constituted by the off-glides **ü, *u* or **i* in combinations with all non-high vowels except **ö*, a vowel with a very restricted lexical distribution and only shortly earlier established in the phoneme inventory (Kallio 2018).

With this remarkably rich Finnic vowel inventory, it is reasonable to expect that the progression of umlaut would have left discernible and datable traces in the corpus of Scandinavian loanwords in Finnic. Nonetheless the Finnic evidence of changing vowel qualities in the source language appears meagre. Difficult questions of interpretation include how to establish reliable etymologies for the pertinent lexical items and, in order to avoid circular reasoning on their chronology, to identify in them multiple sound substitutions that are independently datable. Furthermore, the possibility of spontaneous Finnic autosegmental palatalisation makes it virtually impossible to use front vocalism as probative for front umlaut in the original. Notwithstanding the many difficulties, there appears to be some untapped potential in the testimony of loanwords dependent upon a more refined reasoning, a key issue for this dissertation which is pursued especially in [P1] and [P5].

Runic inscriptions that originate in the umlaut period are classified as transitional because they bridge the periods between inscriptions in the Elder and the Younger Futhark. Their testimony is scant and, despite arduous research, interpretations remain highly ambiguous (Birkmann 1995: 184–185; Barnes 1998: 449). Even where an uncontroversial reading exists, it is generally of limited value to historical phonology because correspondences of runic graphemes to transitory vowel systems are uncertain. Spelling is unpredictable as the runic alphabet was never adjusted to re-establish one-to-one correspondences to the new umlaut vowels but instead was simplified in the face of the challenge (Rischel 2009 [1966]; Antonsen 1967: 27ff; Rasmussen 2000: 149). Where analysis of runic spelling has been of use for phonemic analysis, it has concerned an earlier Proto-Scandinavian (Antonsen 1975; Syrett 1994; Nielsen 2000, 2015) or a later Old Scandinavian language stage (Williams 1990; Larsson

[2] The status of Gulf of Finland Finnic **ë* as a vowel phonologically contrastive with **e* is still not beyond contestation.

2002). Runic inscriptions are occasionally referred to in this dissertation but for the purpose of reconstucting sound history their investigation is subordinated *ad interim* to other methodologies.

1.3 Research questions and perspectives

The history of pre-documentary Scandinavian is tackled from several perspectives. In [P1], [P2] and [P3] etymological questions are studied, while in [P2] and [P3] the contribution of toponomy to providing evidence of language contact is considered. In [P1], [P4] and [P5] questions of historical phonology are developed in depth, with loanword evidence used to varying degrees. All papers enter into critical discussion of the methodology used in the paper itself and in the discipline in general. The research questions asked include:

(1) Why, when corresponding to Finnic substitutes in borrowed words, do Proto-Scandinavian *ai* and its descendants often correlate to Finnish *ai*, sometimes to back-vowel-harmonising Finnish *ei*, sometimes to front-vowel-harmonising Finnish *ei* and only occasionally to Finnish *äi*? [P1]

(2) When and how, if at all, did the palatalisation of the Proto-Scandinavian diphthong *ai* > *ɛi* proceed in the eastern dialects from which the Finnic loanwords may be assumed to originate? [P1]

(3) How can some Finnish toponyms that appear to include prehistoric Scandinavian or Germanic elements be best explained in terms of chronology and sound substitution, and what do they tell us about time, place and nature of language contact? [P2]

(4) How can the oldest strata of Swedish toponyms in Finland and Åland be best explained and may these strata be used to testify to Swedish presence in these areas, or to Finnish-Swedish language contact before the medieval Swedish settlement? [P2] and [P3]

(5) How can the unexpected distribution of front umlaut in the Scandinavian vocabulary be best explained, including when a short trigger followed a short target syllable? [P4] and [P5]

(6) How can the relation of front umlaut to other similar processes of regressive metaphony, such as vocalic breaking and rounding umlaut, be best explained? What prerequisites motivated the operation of different umlauts and how did contrast develop in the vowel system from Pre-Scandinavian Germanic to literary Old Scandinavian? [P5]

(7) What were the prerequisites that motivated the operation of different umlauts; could abstract contrastive feature specifications determine regressive feature

spreading and could ‘underspecified’ phonemes account for the inertia and activity observable as absence and occurrence of umlauts in the data? [P5]

(8) What loanword evidence could be used to test a phonological analysis of umlaut and what conclusion may be drawn from its testimony? [P1] and [P5]

These research questions show that the papers are relatively independent. By and large, the hypotheses, findings or conclusions of one paper are not, apart from [P4] and [P5], built on in the other. This does not mean that the papers are logically detached; they repeatedly cast light on the same issues from different angles. For example, historical phonology is used to establish and date etymologies for borrowed appellatives and toponyms; a correct analysis of toponyms sheds light on the nature of language contact where borrowings of appellatives have occurred. Borrowed appellatives may testify to the qualities of phonemes in the source and target languages and help us to understand the development of their sound systems. These interconnections will be further discussed in SUBS 3.2.

A number of research philosophical perspectives recur throughout the compilation thesis, with implications for its findings:

(1) How can results achieved by one methodology or line of argumentation be compared to and validated by results achieved by another?

(2) Which is the best methodology for each problem and how can circularity or more subtle potential flaws of argumentation be avoided?

(3) Is the present and past research limited by unhelpful biases or tendencies to favour one sort of data or one methodology?

(4) When is it justified to establish that a hypothesis faces such an accumulation of doubts that uncertainty in itself must be deemed the main result of evaluating a research question? (see e.g. SUBS 3.3.1).

In response to these issues arising from the manifold ways of approaching the pre-documentary Scandinavian sound history, SECTION 4 of the summary chapter clarifies how the partial results achieved in the papers may add up to synthesised results or at least indicate new hypotheses to be tested in future research.

1.4 The data

The data delimited for this study are those Scandinavian and Finnic lexical items, including loanwords and toponyms, which are considered to originate in the ancestor languages spoken during the millennium under discussion. The data set is thus not defined by sampling or premeditated selection but by past research in etymology and language reconstruction. The pre-documentary Scandinavian vocabulary is accessed mainly through standardised ‘Old Norse’ (‘ON’), ‘Old Swedish’ (‘OSw’) and ‘Old

Danish' ('ODa') as reflected in etymological dictionaries such as SEO, DEO, AEW, VAEO, PEO, EDPG (reference is made to the section on abbreviations and acronyms above) and commonly used handbooks (Noreen 1904, 1923 [1884]; Wessén 1968 [1941]; Pamp (1971); E. Haugen 1976, 1982; Voyles 1992; O.E. Haugen 2012). Two of the most modern dictionaries, also the most explicit on lexical reconstruction, are *Våre arvord* by Harald Bjorvand and Fredrik Otto Lindeman (VAEO 2007 [2000]) and *Etymological dictionary of Proto-Germanic* by Guus Kroonen (EDPG 2013). The latter is clearly non-reliant on the former and both may be critical of traditional views. Traditional views are also well documented by references in VAEO. In both, the entries do not quite cover the entire Scandinavian vocabulary, but wherever their coverage is sufficient they do serve to verify each other and the research tradition.

Unlike the selective articles in these two dictionaries, *Altnordisches etymologisches Wörterbuch* by Jan de Vries (AEW), aspires to cover the ON vocabulary in full and has been used to complement them. For good coverage of East Scandinavian, the dictionaries mentioned have been supplemented by DEO and PEO for Danish and SEO for Swedish. The digital edition of SAOB has been used, but only sporadically. Works that have not been in use and could be invoked to contest or verify the results include *Nynorsk etymologisk ordbok* by Alf Torp (1992 [1919]), *Isländisches etymologisches Wörterbuch* by Alexander Jóhannesson (1956) and *Íslensk orðsifjabók* by Ásgeir Blöndal Magnússon (2008 [1989]).[3] The relative preference given to AEW, EDPG and VAEO alongside the Swedish and Danish dictionaries secures the use of recent research but not the broadest philological, dialectal and empirical coverage of western Scandinavian. Among the handbooks, the introduction to Old Norse by E.V. Gordon as revised by A.R. Taylor (Gordon & Taylor 1982 [1927]) has not been consulted.

The relevant pre-documentary Finnic vocabulary has been accessed mainly through LägLoS, SSA (see the section above on abbreviations and acronyms) and also through Häkkinen (2007 [2004]). LägLoS and SSA include material on related Finnic languages and LägLoS also provides reconstructed forms for Proto-Finnic and Proto-Scandinavian. In SSA, items are sorted under exclusively Finnish-language entries and reconstructed Scandinavian forms are provided only sporadically, relying on denotation in the sources, and thus in a non-uniform and unreliable shape. Nevertheless, SSA presents the material on related Finnic languages in a more extensive and detailed fashion. Häkkinen 2007 [2004] provides an update for some etymologies proposed after the publication of the other two. Like LägLoS, but unlike SSA, it also elaborates on alternative interpretations and assesses their merits transparently. It thus

[3] Having only an Icelandic name, Alexander Jóhannesson and Hreinn Benediktsson will be referred to primarily by their first names Alexander and Hreinn, including in alphabetical lists (see references section). Ásgeir Blöndal Magnússon is found under his surname Blöndal. In bibliographical references inside parentheses the patronymic last name will be represented by the initial letter '(Hreinn B.: YYYY: pp)'.

provides an additional scholarly opinion on the validity of each etymology. Toponyms have been identified and examined with the help of FSB and SPK. In all categories the dictionaries and handbooks have been supplemented by specialised literature referenced in the text itself.

Besides etymological dictionaries, no comprehensive monographs on Swedish loanwords in Finnish from historic times have been published since Streng (1915) and Karsten (1943). The latter also covers the earlier Germanic and Scandinavian periods. One monograph does contribute, namely the doctoral dissertation of Mikko Bentlin (2008b). While its main subject is Low German loans, it also extensively deals with OSw loans, since most of the potential Low German ones have been mistaken for OSw and Bentlin weighs their explanations.

Naturally, not all of the reconstructed Scandinavian and Finnic vocabularies could be given equal attention in this compilation thesis. In [P1] the selection was limited to all borrowings that reflect a descendant of the PSc diphthong *ai*, even allowing the lexical items concerned to be counted. In [P2] borrowed toponyms were selected based on their estimated contribution to the purpose of the papers. The selection could thus be seen as subjective, but is fairly extensive compared to the scarcity of potentially relevant material. In [P3] the names analysed represent a good number of major or strategically situated islands, parishes and localities along sea routes in one contact zone – namely place names in the Åland archipelago deemed old on the basis of generally accepted toponymic wisdom. For [P4] and [P5] items that contain phonemes in phonological contexts relevant for the phonological development under scrutiny were sourced from etymological dictionaries. The examples chosen are aimed to be representative and probative. Where the comparative method is used, explicitly or implicitly, a relative bias has been applied in favour of cognate lexical items which are found also in OSw and/or ODa. Where internal reconstruction was pursued, representative minimal or subminimal pairs were sought in order to highlight the pivotal phonological differences.[4]

The runic inscriptions are referred to sporadically, partly based on how they are invoked in secondary sources. Such carvings are only invoked rarely, to supplement an existing argument and not relied upon for any crucial phonological argument (see SUBS 1.2).

[4] It is acknowledged that [P4] and [P5] are not as data heavy as their ambitious scope may require. Future discussion on their findings warrant better use of Övdalian, Gutnish and Faroese and more thorough dialectal, philological and/or toponymical sources.

1.5 Definitions and presentational conventions

Apart from presentational practices customary for the discipline, some conventions defined in 'subs.1.1' of [P4] (and where applicable 'subs. 1.2, 3.1 & 3.3' of [P5]) will be followed in the summary chapter, including as references to the transitory language stages of preliterary Scandinavian. Where the language is not designated, italic font refers by default to standardised Old Norse (without asterisk) or to Proto-Scandinavian (with asterisk) while runic attestations come in bold face type. Expected but counterfactual reconstructions are prefixed with a '+' sign, and cognate or equivalent forms are connected with a '~' sign. Regular sound change is marked with '>' or '<', mutation or borrowing with '→' or '←'. The innovative use of symbols used in [P5] (subs. 1.2 and Appendix 1) will be employed only when deemed justified by the context.

Throughout the papers, PGmc word-final nasalised vowels, typically occurring in acc. sg. of masculine and neuter nouns, are not marked for Proto-Scandinavian or Pre-Scandinavian as distinct from oral ones. Unlike later 'Transitional Scandinavian' ('TSc') bimoraic nasalised vowels, the Pre-Scandinavian nasalised vowels were deleted by the same syncopation rules as oral vowels (see also [P5] nt 57). It cannot be excluded that they left different umlaut traces than oral ones before their deletion (thus Elmevik 1993: 81–83) but as an initial assumption and freely applied this would open up an excessively versatile potential for explanations, which often would be *ad hoc*.

The following definitions apply to this summary chapter, and unless specified otherwise in the papers, to them as well.

The use of 'front umlaut' refers to the fronting or 'laminalisation' of non-palatal target vowels in word-initial syllables under the regressive metaphonic influence of a coronal trigger vowel in a non-initial syllable. The conventional terminology has not been used, which is "palatal umlaut" or "front mutation". The phonetic denotation 'palatal' is considered to be ambiguous for the phonological analysis in [P5] where a distinction is made between the feature [+/–coronal] and the feature [+/–back]. The term 'mutation' is considered slightly misleading since, according to the starting point for umlaut chosen and justified in [P5], no target vowel gives up its contrastive specifications as a result of metaphonic influence alone. Therefore 'mutation' is reserved for more exceptional phonematic change where contrastive features are indeed given up or swapped for their opposites. The term 'umlaut' when used alone and without further qualifications (such as 'raising umlaut', '*i/j*-umlaut', 'rounding' or '*u/w*-umlaut', 'back umlaut' or 'lowering' or '*a*-umlaut') can mean every one of these metaphonic changes. 'Breaking' means a process of inceptive 'back umlaut' followed by 'segmentation'. When used in the expression 'umlaut and breaking' the term 'umlaut' becomes defined by the context to a stricter meaning, which excludes the back umlaut.

‘Syncope’ is frequently used to mean both medial syncope *sensu strictu* and word-final apocope, on the condition that it is concurrent and governed by the same rules and constraints as medial syncope. Owing to this last condition, unlike in older practice, the term ‘syncope’ has been avoided in [P4] and [P5] as a designation for later reduction of vowels in word-final syllables, which occurred in the ninth century.

The use of adjectives such as ‘phonological’, ‘phonemic’, ‘phonematic’, ‘lexical’, ‘underlying’ and ‘contrastive’ on the one hand, and ‘phonetic’, ‘superficial’, ‘redundant’ and ‘post-contrastive’ on the other hand, is problematic insofar as it is very sensitive to theory. The problem arises mostly in [P4] and [P5]. In general, there is a conflict between faithfulness to the theory applied in the source referred to and faithfulness to the theoretical basis of the author′s own argument. In all but the final paper, the aspiration is to be theory neutral, that is, to rely on the lowest common denominator for present mainstream phonological theory. This approach enables greater faithfulness to the terminology of scholars referred to. In contrast, [P5] explicitly relies on the Contrastive Hierarchy Theory (Dresher 2008, 2009, 2015a, 2015b, 2016) and terminological consistency and rigour has been prioritised. There the term ‘contrastive’ is preferred when ‘lexical’ (or ‘underlying’/‘phonemic’) representations are referred to and ‘post-contrastive’ when ‘allophonic’, ‘sub-phonematic’ or ‘surface’ representations are meant, whether they are ‘positionally predictable’, that is, derived by context-specific rules, or simply context-independent ‘feature enhancements’.

It has not always been possible to avoid the use of ‘phonological’ in a variety of meanings, though these should be clear from the context. At times ‘phonological’ is used in a more general sense, which includes phonetics and prosodic issues, but elsewhere it is used in clear dichotomy to acoustic surface phonetics, as understood in structuralist, generative, lexical or contrastive phonological theory.

‘Preliterary Scandinavian’ captures all the language stages of common, western and eastern Scandinavian after the second-century breakup of the ancestor common for North and West Germanic (i.e. Northwest Germanic) but before the appearance of Old Scandinavian languages attested in fully-fledged corpuses of texts. In the strictest sense it could be most correct to consider Scandinavian a “literary” language from the appearance of the first recorded runes and to use the term ‘pre-documentary’ for these stages, attested purely in runic inscriptions. Yet owing to the unusual and fragmentary genre of the carvings and their orthographic unreliability, the better known term ‘preliterary’ is preferred, as in the papers and title of the compilation thesis. Since the focus is primarily phonological this seems especially justified, at least for all but the youngest inscriptions. Only these late Viking Age runic inscriptions in the Younger Futhark could be considered “literary” in the strict sense defined above, as only the youngest carvings form a fully-fledged corpus of text. Moreover, in the way the term ‘preliterary’ is used here, including in [P4] and [P5], the period (“literary” or ‘preliterary’) Viking Age runic inscriptions in the Younger Futhark after 850 CE are under-

stood to belong to is of little consequence for the mostly examined transitional period, which terminates in 850 CE.

In [P4] and [P5] archaisms in Proto-Scandinavian are identified, namely retained contrasts in the vowel system that originate from a Pre-Germanic stage of development. Provided that the prevalent Germanic branching model is correct, which is certainly not contested here, the same archaisms must by deductive necessity have been present in NwGmc and PGmc, with implications for their reconstruction. This compilation thesis is delimited to Scandinavian sound history, so it has not been possible to revise the reconstruction of NwGmc or PGmc vowel systems. Instead, as a provisional measure and pending further scholarly discussion, in [P4] and [P5] reconstructed lexical material from this period are denoted 'Paleo-Germanic' ('PlGmc'), whenever referring to an early PGmc stage where all the archaisms are in their original state, and 'Pre-Scandinavian' ('PreSc'), which is meant to be indifferent to the distinction between NwGmc and later PGmc. This is why both Proto-Germanic and Northwest Germanic are found within the 'Pre-Scandinavian' circle in FIGURE 1.

Proto-Scandinavian is defined here (see SUBS 2.1.2) as being 'the last developmental stage unaffected by second-syllable syncope and pertaining to the common ancestry of the later attested Old Gutnish and Old Scandinavian languages and dialects, as well as Övdalian.'

The term 'eastern' (Scandinavian) in lower case will consistently refer to OSw, ODa and 'Old East Scandinavian' ('OESc') as well as to their preliterary dialectal precursors when specifically eastern characteristics, rather than periodisation, are the focus. This qualifier will not cover Old Gutnish, Övdalian or their precursors. The use of the qualifier 'western' in lower case is similar, *mutatis mutandis*.

2 Background and past research

This section will give some background to the research questions with occasional review of existing research in the field of preliterary Scandinavian and Finnic historical phonology and Finnish lexicology. The first subsection will discuss some of the most relevant uncertainties involved in describing the phonological evolution of preliterary Scandinavian vowel systems. The middle subsection will discuss issues pertaining to Finnic historical phonology, the borrowing of lexical items from pre-literary Scandinavian and the spatial and chronological context of language contact. The final subsection will return to the the topic of preliterary Scandinavian and present some specific aspects of the research history of front umlaut, warranted in view of the extensive scrutiny of this issue in [P4] and [P5].

2.1 Preliterary, 'pre-documentary' reconstructed and runic Scandinavian

2.1.1 The transition from Proto- to Old Scandinavian and the knowledge gap

The knowledge gap between NwGmc at the beginning of our timeline and OSc at the end of it should not be underestimated, especially not by tacitly overlooking the challenges involved in bridging this interlude with clear descriptions of transitory stages. Unfortunately, this negligence is visible in the traditional periodisation of preliterary Scandinavian development. As seen in TABLE 1 (SUBS 1.2. above) there is a tendency to jump directly from a period containing qualifiers like "Proto-" (sometimes "Primitive" or in German and Scandinavian "Ur-/ur-") Nordic (or "Scandinavian"/ "Norse") to the more recent periods with the qualifier "Old" (or in German "Alt-", Danish "old, gammel", Norwegian "gammel-" or Swedish "forn-") "Scandinavian"/ "Norse". Similarly, there is at times a reluctance to acknowledge that vowel reduction, which lasted for almost four centuries, was clearly divided into two distinct stages. An analysis combining runic attestations with prosodic theory makes it possible to distinguish a fifth-to-seventh century syncope period (including cases of apocope) from a ninth-century period of further vowel reduction (see SUBS 2.3.1 and NT 1 above). At least in terms of vowel reduction, the eighth-century interregnum would have been relatively stable (Grønvik 1998: 26). It is rather astonishing how little effort has gone into reconstructing synchronic sound systems for the stages, which in [P4] and [P5] are coined 'Post-Proto-Scandinavian', 'Transitional Scandinavian' and 'Ancient Scandinavian' ('ASc'). Many handbooks, like those by Noreen (1904; 1923 [1884]), Voyles (1992:103–135) and O.E. Haugen (2012: 53–59), atomistically describe the changing vowel phonemes from PSc departure forms to OSc end states without giving much consideration to how they contrasted mutually in the transition period, namely after some new vowels had already become phonological and others had not. Others, such as E. Haugen (1982:30–33) and Spurkland (2006), continue the

structuralist tradition of Antonsen (1967) and appear to settle for a near panchronistic phonologisation of all umlauts at once, at least as an analytically valid approximation. Credit must be given to Bengt Pamp (1971: 76) and Hreinn Benediktsson (1982), scholars explicitly admitting to the fact that front umlaut is not well explained.

The task at hand is not an easy one. To make it clear in the first place, the runic alphabet does not help much. It was originally designed for the vowel system of some early Germanic vernacular (we do not know which one) and may not have represented Proto-Scandinavian perfectly even to begin with. Furthermore, the alphabet was not modified to represent newly-emerging umlaut vowels unambiguously. Instead, faced with the challenge that they posed to spelling, the grapheme inventory was reduced after it had lost possible previous one-to-one phonemic correspondences. This led to systemic use of one grapheme for several phonemes (Rischel 2009 [1966]: 261f; Antonsen 1967: 27ff; Rasmussen 2000: 149; Spurkland 2006: 336–337; cf. SUBS 3.5.2 below).

Of course, the orthography could and did reflect vowel deletion (Spurkland 2006: 338), but there are not enough extant inscriptions to determine the chronology of deletion for each vowel quality in all possible prosodic contexts. In most cases the testimony of transitional runic inscriptions may at best be used negatively, that is, to test hypotheses after they have been postulated theoretically (Riad 1992: 115).

The reconstructive task is further undermined by the indecision of theoretical phonology in predicting how syncope/apocope is related to the genesis of new vowel phonemes. Simply put, even if we could use runic inscriptions to infer the order in which each particular trigger vowel was deleted (which we cannot) we would often still not know when this deletion did or did not gave birth to a new vowel phoneme. Quasi-phonologisation or even phonologisation is likely to have occurred even before trigger loss (Schulte 1998: 63ff; Liberman 1991; Spurkland 2006: 339–340; P. Kiparsky 2009: 27–37; ibid. 2015: passim).

This lack of effort invested in reconstructing vowel systems of the transitional period is all the more surprising given the potential of reconstructive methods in historical phonology.[5] Due to their divergent sound systems, some North Germanic (or para-Scandinavian) dialects could be used comparatively to establish a pre-Viking Age reconstruction. Old Gutnish, which is attested on the island of Gotland in the thirteenth century, preserves particularly archaic traits that testify to a distinct outcome of front umlaut. This has been known for more than a century (H. Pipping 1901:103–130; H. Pipping 1904:18–24; Carlsson 1921).[6] Still today, it is assumed that these

[5] Skomedal (1980: 136–138) deserves recognition for his positive efforts in this regard.

[6] See also Vrieland (2011). For the further development of Old Gutnish to contemporary Gutnish see Gustavson 1940, 1948).

characteristics should be projected all the way back to an era when front umlaut was active (see e.g. P. Kiparsky 2009: 40f).[7]

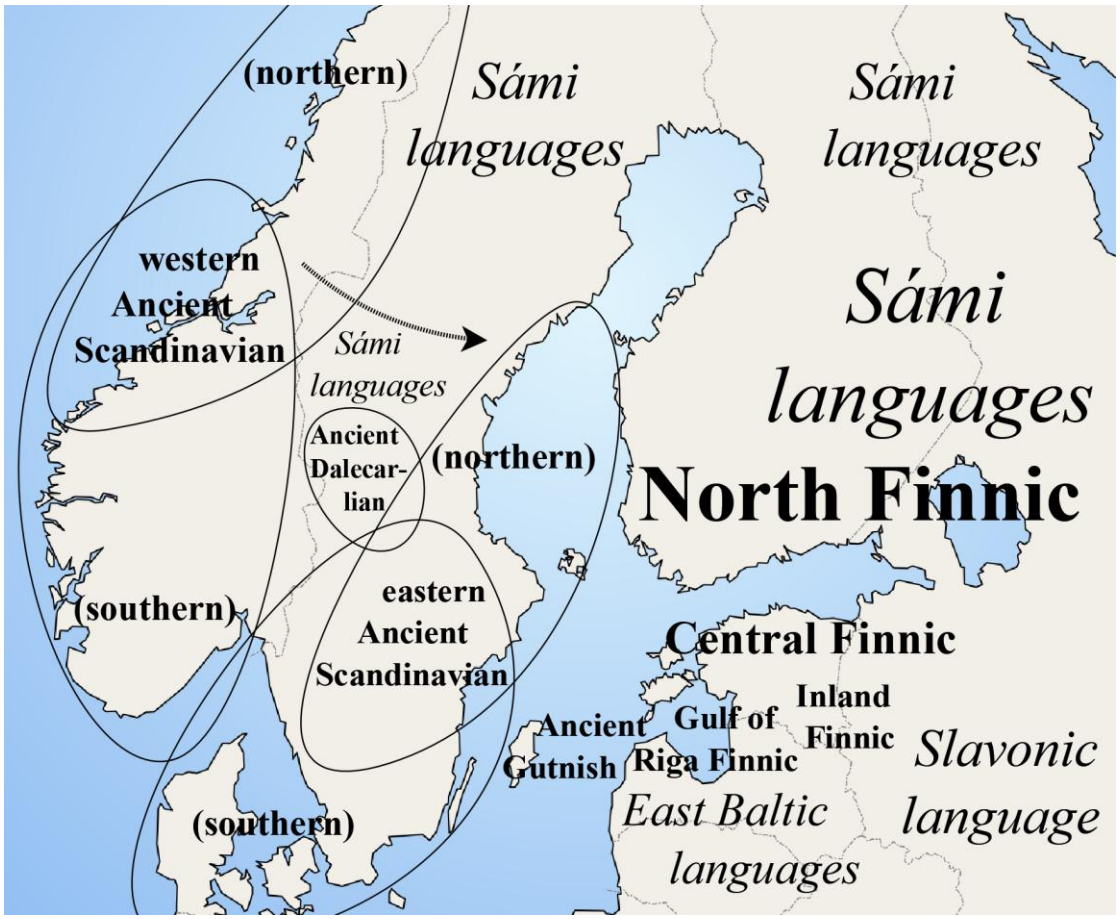
A more complicated case is that of Övdalian (also known by the exonym Elfdalian), a modern spoken vernacular in the upper parts of the province of Dalarna northwest of Stockholm, adjacent to the mountain range bordering Norway. Linguists are debating whether the archaic phonological innovations preserved in this vernacular could be at least as old as the breakup of mainstream Scandinavian into OESc and ON (Kroonen 2012). If so, it would descend from a separate hypothetical ancestor, different from OESc, ON or Old Gutnish.[8] I propose tentatively to call this ancestor 'Old Dalecarlian' even if it creates a problem of classification, not soluble here, for a number of neighbouring modern vernaculars especially in the Ovansiljan area of Dalarna and also for dialects beyond the Norwegian border. These vernaculars are also very distinct and have traits in common with Övdalian.

Unfortunately, it is difficult to use Gutnish and Övdalian comparatively without knowing their precise position in the Scandinavian family tree. In a near circular manner, this is dependent on establishing a correct relative chronology of Scandinavian vowel history, which in turn is contested. The main aim in this compilation thesis is not to analyse Old Gutnish and Övdalian sound history, but to compare and reconstruct the mainstream Old Scandinavian languages (ON, OSw and ODa). Nevertheless, one possible implication of the findings is that the divergent outcome of rounding umlaut triggered by a sequence *-wa*/*-wō* in these two (para-) Scandinavian languages may have to be backdated further than the prevailing chronology ([P5]: subs. 4.3.2, nt 34; cf. Edlund 2018: 9–16). This would require us to assume that they branched off from the Scandinavian family tree even earlier than believed so far, which justifies the synchronic illustration in MAP 2 with separate hypothetical branches for 'Ancient Gutnish' and 'Ancient Dalecarlian' during the eighth century. Other preserved phonological features, such as lack of *ʁ*-mutation, also indicate that the mainstream dialects around the Mälaren valley, extending to the coastal dialects of Norrland, Finland and Estonia, disagree with breakaway Gutnish and Övdalian to agree with eastern Scandinavian instead.

[7] It was brought to my attention in the finalising stage of this thesis that Thorsten Andersson (2012; 2017) has revived a discussion on the how close the relationship was between Gutnish and Gothic.

[8] It is not excluded that a similar argument, based on very ancient innovations, may be pursued for other remote particularised dialects in Scandinavia. Diachronic linguists are not alone in arguing over the status of Övdalian; sociolinguists, civil society and politicians do so too. This dispute concerns efforts to gain official minority language status for Övdalian, which Sweden has so far denied.

Map 2. Estimates of approximate sites of language communities around 700 CE



All reservations on the encirclements of language communities discussed with reference to MAP 1 in SUBS 1.2 apply here too.

Following this analysis in [P5], MAP 2, as compared to MAP 1, illustrates the expansion of central dialects of eastern Scandinavian around the shores of Øresund and Lake Vättern. These seem to have intrusively spread eastward and northward approximately between 500 and 700 CE and absorbed dialects that were more closely related to the ancestors of Dalecarlian and Gutnish. West Scandinavian traits may have begun to spread eastward in the north in this period, too. MAP 2 also illustrates that, since the period illustrated in MAP 1, 'Gulf of Finland Finnic' ('GFFc') had split into a northern and a central dialect, divided by the gulf itself.

2.1.2 The separation of Scandinavian from Northwest Germanic and its chronology

It is a reasonable and largely held view that the language of the runic inscriptions found on Scandinavian territory, written in the Elder Futhark and dated to the interval 160-500 CE, is more or less representative of 'Proto-Scandinavian', as defined in SUBS 1.5 above. Given this assumption and the fact that the available runic graphemes still covered the pre-umlaut phoneme inventory of Proto-Scandinavian fairly well,

runic evidence is somewhat more useful than in the case of Transitional or 'Early Ancient Scandinavian' ('EASc') (see for example Antonsen 1975; Syrett 1994; Nielsen 2000, 2015).

FIGURE 1 shows a family tree for the North Germanic languages. It is a slightly enhanced version of 'Figure 1' in [P4]. The proximity of parallel vertical arrows in the middle serves to illustrate the relative unity throughout the umlaut and syncope era of mainstream Scandinavian, whether seen as the ancestral dialect of Old East Scandinavian or of Old Norse. The arrows also indicate that minor but clearly reconstructible differences regarding *w*-umlaut already existed in Post-Proto-Scandinavian (see [P5]: subs. 4.3.2, 4.5 and 6.4.1 nt 70). This may be configured as diverging in three directions: in western dialects, PlGmc */i/ could become laminalised under the influence of a coronal trigger *-wî* and become alterable by rounding (as in *nykr* 'water-monster' < **nikwiz*-); in ancestor dialects of Old Gutnish and Övdalian, PSc **î* could back-mutate and become inalterable by rounding (as in *singa* 'to sing' < **sîngwan*); in central eastern dialects the alterability of the target by *w*-umlaut conformed with the etymological origin of the vowel. Following this three-way split, Ancient Gutnish continued to grow phonologically furthest apart, evident in the different outcomes of *i*-umlaut, while the ancestor dialects of OESc and ON continued to develop closely in parallel.

Wherever reconstructions may be checked against reality, family trees are at best fair approximations of genetic relations. The comparative method typically conceals or fails to reflect variation in proto-languages. Hence it is very unlikely that Proto-Scandinavian had no dialectal variation and it cannot be assumed axiomatically that all attestations of runic North Germanic on Scandinavian territory reflect a vernacular precisely identical with the reconstructed common ancestor of the modern Scandinavian languages (Spurkland 2006: 342–344). When the runic inscriptions were carved, similar but less well-known North Germanic dialects may possibly have existed, later becoming engulfed by mainstream Scandinavian and ultimately remaining without genetic OSc descendants. These dialects could of course have become recorded in runic inscriptions. In particular it may be conceived that such dialects could have existed in the south-eastern periphery, relatively close to Gotland where such difference is attested. In Blekinge, for instance, carvings from the transitional period were found to attest to epenthetic vowels that have no followers in OSc (P. Kiparsky 2009: 20–25). Not very far away, in eastern Götaland, there is consensus about reading a 'Late Transitional Scandinavian' ('LASc') attestation of the m. acc. pl. cardinal number 'four' as **fiakura**, which may have to be analysed as */fjǫgurã/, again a form without regular descendants in OSc (Stiles 1985: 101–103). In order to maintain methodological rigour and secure the autonomy of reconstructive methodology, Proto-Scandinavian is defined independently of runic language (see SUBS 1.5).

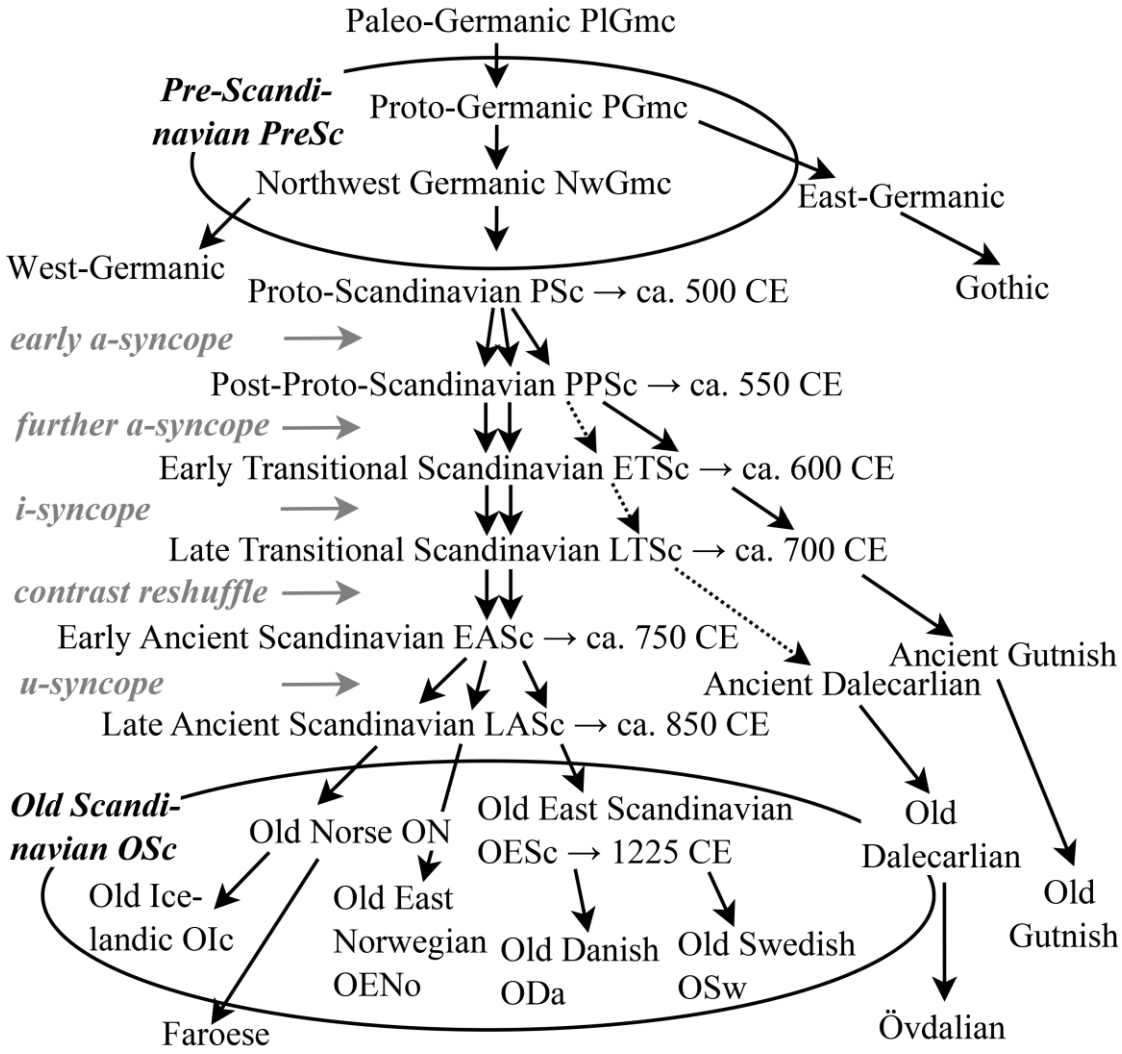


Figure 1. The branching of preliterary Scandinavian languages.

A chronological reservation has been put on the identification of older runic Scandinavian with Proto-Scandinavian. It has been claimed that the language of the oldest runic inscriptions is indistinguishable from reconstructed Northwest Germanic. One reason for jumping to such conclusions was the archaic appearance, evident e.g. in the lack of second-syllable syncope, which sets older runic language, as attested well into the fifth century, apart from all other attested old Germanic languages. Such views were widely held in the twentieth century (Kuhn 1955 as referred to in Nielsen 2015: 51). Alternatively, the language in these older Scandinavian runic inscriptions was either thought to be Proto-Northwest-Germanic (Voyles 1992: 71, 77–79, 103) or a commonly used koiné based on some Northwest Germanic standard (Makaev 1965 as referred to in Grønvik 1998: 71). Nevertheless, Hans Frede Nielsen (2000: 77–122; 2015: 56–57) has convincingly shown that West Germanic vowel systems for syllables in a weak position cannot be derived from the corresponding vowel system that is reflected in the runic inscriptions preserved in the Elder Futhark in Scandinavia. Hence these older runic carvings reflect a language distinctly North Germanic (as

opposed to Northwest Germanic) in character. This entails that Northwest Germanic was spoken before the runic attestations, which in Scandinavia date back to around 160 CE. Nielsen′s view is a starting point for the present compilation thesis.

Another reason to backdate the common ancestor of North Germanic and West Germanic to an earlier period than runic Scandinavian is the stratigraphy of Germanic loanwords in Finnic. On the Finnic side it may be inferred that the breakup of LPFc occurred only after the NwGmc sound changes took effect, including the change of PGmc *$\bar{e}_1$ to NwGmc *$\bar{a}$, but before an abundance of other old loanwords were borrowed, also before the syncope. Thus it is completely untenable to follow Voyles (1992: 71f, 77f) when he qualifies the runic inscriptions between 200-400 CE as "Early Northwest Germanic" and in particular when he dates the change of PGmc *$\bar{e}_1$ to NwGmc *$\bar{a}$ as late as 200 CE.

The flawed tendency to date Proto-Northwest Germanic late and to belittle its differrences from Proto-Scandinavian was favoured by the mid-twentieth century rise of structuralism, which entailed an endeavour to reconstruct allophonic umlaut in Northwest Germanic (Antonsen 1967; ibid. 1972: 132–133). This attempt was driven by an aspiration to make diachronic explanation more economical; in this view, it was unlikely that almost the same allophonic fronting phenomenon would have arisen more than once in a conspiracy-like fashion in the different Northwest Germanic daughter languages. The author was initially agnostic on this particular point of early allophonic umlaut (see SUBS 2.1.3 and 2.2.1) but identified a different way of reconciling the similar yet diverging data for North and West Germanic during the course of the research ([P5]: subs. 6.2). This will be discussed in SUBS 4.1 below.

2.1.3 The periodisation of Scandinavian and of its east/west dialectal split

The periodisation applied to the developmental stages of preliterary Scandinavian is approached differently in the respective five papers. These differences are reconciled by the synthesis in TABLE 4 in SUBS 2.2.2. A comparison of the differences, illustrated in TABLE 2, merits a background discussion here.

The problematic period is divided (in TABLES 1 and 2 & FIGURE 1) into Post-Proto-, Transitional and Ancient Scandinavian. This follows the periodisation used in [P4] and [P5]. Yet in [P1], [P2] and [P3] this transitional period is called 'Early East Scandinavian', which by implication is paralleled by 'Early West Scandinavian'. The use of the terms 'eastern' Scandinavian and 'East' Scandinavian thus differ somewhat in the papers, for two reasons. The first is a differing approach to developmental stages of the language, either as snapshots of valid nodes in a branching family tree or as historical periods of language evolution. The second is evolution of the analysis during the research.

Table 2. The differing chronologies used for preliterary Scandinavian in the papers

Paper [P2]: Period	**Scandinavian development stage**	**Paper [P1]**	**Papers [P4] & [P5]: Stages**	**Period**
500 BCE - 200/100 BCE	Proto-Germanic ~ *urgermanska*	urgermanska ~ *Proto-Germanic*	Paleo-Germanic	- 1st millen. BCE
200/100 BCE - 200	Northwest Germanic ~ *nordvästgermanska*	nordvästgermanska ~ *Northwest Germanic*	Pre-Scandinavian	1st millen. BCE - 200/400
200 - 400	(Early) Proto-Scandinavian ~ *(tidig) urnordiska*	urnordiska ~ *Proto-Scandinavian*		
400 - 550	(Middle) Proto-Scandinavian ~ *(medel-) urnordiska*		Proto-Scandinavian	200/400 - 450/550
			Post-Proto-Scandinavian	450/550 - 500/600
550 - 750/800	Early East Scandinavian ~ *sen (östlig) urnordiska*	tidig östnordiska ~ *Early East Scandinavian*	Early Transitional Scandinavian	500/600 - 550/650
			Late Transitional Scandinavian	550/650 - 600/750
			Early Ancient Scandinavian	600/750 - 700/800
750/800 - 1225/1250	Old East Scandinavian ~ *runsvenska/rundanska*		Late Ancient Scandinavian	700/800 - 825/900
		fornöstnordiska ~ *Old East Scandinavian*	Old (Norse & Old East) Scandinavian	825/900 - 1225
1225 - 1375	Old Swedish ~ *klassisk/äldre fornsvenska*	fornsvenska ~ *Old Swedish*	Old Swedish	1225 -
1375 - 1521/1540	Old Swedish ~ *yngre fornsvenska*			
1521 - 1732	Early New Swedish ~ *äldre nysvenska*	nysvenska ~ *New Swedish*		

The first three papers focus on language contact and the periodisation there represents a synthesis of a common opinion with a certain element of eastern Nordic perspective and even personal judgement. In them, the specifically Scandinavian stages of language development are primarily configured as historical periods during which certain changes happened. The last two papers, in contrast, focus on reconstructing theoretical stages in the preliterary Scandinavian vowel system; the periodisation is essential to the analysis and a tool to refer to reconstructed forms. Therefore the stages are primarily ahistorical levels of reconstruction, that is, snapshots based on theoretical projections of later comparative data into a hypothesised past. Absolute chronologies and historical periodisation are secondary here, a means to contextualise an essentially relative chronology with the chronology of runic inscriptions.

Secondly, the differences to some extent reflect the development of the analysis. In [P2] (pp. 404–405) I made a point of challenging two research traditions, which pose conflicting claims on Viking Age vernaculars. The first one anachronistically projects the later language history of nation states onto earlier developmental stages even where the national qualification of the dialect is unwarranted. In Sweden and Denmark, it is conventional to include the eastern Viking Age dialects under the terms "Runsvenska" ("Runic Swedish") and "Olddansk" ("Old" or perhaps more literally "Ancient Danish"; for a clarification see [P5]: subs. 1.1 nt 6). This nationalistic backdating goes so far as to claim that these stages directly follow a stage characterised as "urnordiska" without any intermediate common eastern Scandinavian precursor (TABLE 1 above; Widmark 2001: 71). Modern scholars readily admit that there are few grounds to distinguish "Danish" and "Swedish" features of eastern Scandinavian in the ninth century (Pettersson 2005 [1996]: 74–75), but no inclination to break the tradition is seen in national handbooks (ibid.: 74–77).

Another more North American research tradition (see TABLE 1) emphasises the unity of the Scandinavian language until the end of the Viking Age. This tradition is per-haps best represented by the notion of "Common Scandinavian" for a stage continuing until 1050 CE, a view maintained by the North American scholar Einar Haugen (1976; 1982; cf. "Common Nordic" in Tifrit & Voeltzel 2015: 60). My assessment of this periodisation was very critical at the time of writing [P2] (pp. 404–405), reflected in the periodisation used in [P1] (p. 242 nt 1 and Figure 2 on p. 257). Haugen′s periodi-sation, in its emphasis on Viking Age unity, could be viewed as opposed to the arbitrary nationalist terminology in Denmark and Sweden. This generalisation seems to be taken too far, since it may cause other problems. Tacitly or by default, it could overrate the evidence of the very archaic and best attested western dialects commonly called 'Old Norse' or in Scandinavian 'norrønt mål' or 'fornnordiska', effectively allowing the misunderstanding that this language, whether

attested in Iceland or in Norway, is by and large the ancestor of Old Swedish and Old Danish.[9]

Both research traditions have one trait in common: they obscure the fact that the eastern Scandinavian precursors of Danish and Swedish share a number of innovations, which seems to call for a valid node in the Scandinavian language tree. In a similar way some innovations common to western dialects of Scandinavian also need to be backdated to before the Viking Age, exemplified by *w*-umlaut on descendants of PlGmc */i/ ([P5]: subs. 4.5). Thus, the respective arguments for the western and eastern branch are both justifiable on the basis of innovations.

For these reasons, which will be shown to be insufficiently convincing, I chose at the time to use 'Old East Scandinavian' in [P2] and 'fornöstnordiska' in [P1] for the Viking Age, and 'Early East Scandinavian' in [P2] and 'tidig östnordiska' in [P1] for a transitional period preceding it. The older of these, Early East Scandinavian and Early West Scandinavian, coincide chronologically with stages called East Nordic and West Nordic by Antonsen (1975: 27). The same developmental stage corresponds to a period some call "Late Proto-Nordic" ("sen urnordiska" or "Späturnordish"), a term which for good reasons has been criticised by Grønvik (1998:15) as contradictory. In the runological tradition this period is commonly referred to as 'transitional', because inscriptions reveal the incipient structural changes in the language system before simplification of the runic alphabet made them harder to detect. As for linguistics, Grønvik suggested to replace "Späturnordish" with "Nachurnordish" ("Post-Proto-Scandinavian") but his proposed terminology has not been commonly adopted until now.

During my research into the transitional vowel systems of these periods, I opted to cease calling the language of eastern Scandinavia in the transitional period 'Early East Scandinavian'. As seen in TABLES 1 and 2, as well as FIGURE 1, the 'transitional' period between 'Proto-' and 'Old Scandinavian' is divided into 'Transitional Scandinavian' and 'Ancient Scandinavian'. 'Old Scandinavian' is reserved for the language where vowel reduction is completed, even if the structural differences to eighth-century ASc in other respects are indeed minor. As seen in FIGURE 1 (SUBS 2.1.2) and in 'Table 5' in [P5], 'Post-Proto-Scandinavian' is defined as a very brief period of incipient *a*-syncope immediately preceding TSc. Together with this overhaul of periodisation I have come to reject the view in [P2] (p. 404), which derived preliterary

[9] It is evident that such a misunderstanding of the Scandinavian family tree does exist. For example in the Wictionary project, for what it is worth, the immediate ancestor of Old Swedish and Old Danish is thought to be "Old Norse".

https://en.wiktionary.org/wiki/Category:Old_Swedish_language

https://en.wiktionary.org/wiki/Category:Old_Danish_language

This use of "Old Norse" is erroneous and confusing, because the term is also used for western Scandinavian language attested in Latin alphabet from the eleventh to the early fourteenth centuries.

Gutnish from Early East Scandinavian and instead come to stress the relative unity of mainstream ASc and its separation from Ancient Gutnish (and partly from Ancient Dalecarlian, the precursor of Övdalian). This reconfiguring of the family tree warrants more explanation. The peculiarities of Old Gutnish and Övdalian were already discussed with MAP 2 in SUBS 2.1.2; next, the focus will be on the late diversification of mainstream ASc.

Many of the differences that separate eastern and western Scandinavian relate somehow to the output of umlaut. At the outset, my understanding of umlaut was strongly influenced by structuralism. When writing the first papers I thought, like Hesselmann (1945: 9f, 12), Penzl (1951) or Widmark (1991: 91–101), that allophonic umlaut was early and I was open to testing the idea that it was even reconstructible to Northwest Germanic (Antonsen 1967; ibid. 1972: 132–133; Spurkland 2006: 318). All the vowel qualities would have been panchronistically present as phonetic entities from the beginning of syncope. Late Proto-Scandinavian would thus, during the incipient syncope, have contained the allophonic seeds of the later east/west split that came to concern the Old Scandinavian output of umlaut. Thus, there would have been good grounds to configure the transitional era as the beginning of the next stage, rather than as the end of the previous one. This was one of the prime reasons for denoting the period immediately following Proto-Scandinavian in [P2] as 'Early East Scandinavian' and in [P1] as 'tidig östnordiska'.

There are good arguments against projecting the original causes of all the later east/west differences in umlaut outputs that far back. Firstly, the evidence of Finnic loanwords does not support the predictions concerning allophonic umlaut that tend to result from a structuralist analysis. If allophonic umlaut had been salient and perceptible already in the common ancestor of all Northwest Germanic languages, front vocalism would have characterised the Finnic loanwords during the era when borrowing was at its most intense stage, corresponding best to 'Coastal Finnic' and 'Gulf of Finland Finnic' levels of reconstruction (TABLE 3). This argument will be revisited in SUBS 2.2.1 below.

Secondly, it should be asked how numerous and profound the differences need to be to justify a terminology that emphasises breakup into two different branches and how well they should coincide areally to qualify. Examples of changes that appear insufficient would include the different distribution of the obviously late *gi/ki*-umlaut (such as ON dat. sg. *degi* 'day' vs. OESc **dagi* 'ibid.') or the assimilation of nasals (Moberg 1944: passim), noth traits typical for the western branch that has also spread to some eastern dialects.

Furthermore, a main conclusion of my research is that the most profound systemic pivot point between Proto- and Old Scandinavian occurred well into the syncope period, when a thorough simplification of the contrastive feature hierarchy for vowels terminated many of the umlaut phenomena. Remarkably, this 'contrast reshuffle' did not treat the ancestor(s) of eastern and western Scandinavian differently. Furthermore,

the main systemic differences in umlaut output between the east and the west, vis-à-vis rounding umlaut on low vowels (*a* > *ǫ* as well as *ā* > *ǭ*), have arisen after this reshuffle.

Thus, there are not many valid characteristics distinguishing western from eastern Scandinavian during the transitional era of primary umlaut and early syncope, which antedated the contrast reshuffle. I also conclude that the subsequent secondary rounding umlaut initially did affect eastern and western Scandinavian in a similar fashion. Only later, in an innovation common to ODa and OSw, was the contrast between /a/ and its rounded opposite neutralised, for instance causing homonymy between plural *land* 'lands' < *lǫnd* and singular *land* 'land' < *land* in the east only. There is runic evidence (such as the frequent spelling of m. acc. sg. **fauþur** ~**fǫður*) to suggest a relatively late eastern rounding reversal, not very far off 1050 CE, the date used by Einar Haugen as a terminal point for "Common Scandinavian".

Nonetheless, the monophthongisation of primary diphthongs (*ɛi* > *ē*, *ǫu* > *ǭ* and *øy* > *ø̄*), frequently treated as an eastern innovation, does not coincide with that date. It must have started much earlier in the Danish south, while it has never reached some of the peripheries of the eastern dialect area. Thus at the time, monophthongisation did not characterise the OESc level of reconstruction. Rather, the uniformity of the reconstructed language is contested by the distribution of the preserved diphthongs.

To analyse the chronology of the spread of all the innovations characteristic for the east/west split would be an arduous challenge, partly beyond the scope of this compilation thesis. Yet even the few changes mentioned here show that the known facts cannot be neatly squeezed into a binary tree model. 'Old East Scandinavian' must be viewed as a non-uniform and non-datable target, some dialects of which contained archaisms atypical for its mainstream dialects. Forms that are reconstructed for OESc and marked with an asterisk in [P4] and [P5] therefore merely represent the innovations common to literary ODa and OSw and are thus by definition not meant to represent a precisely chronologically or spatially defined vernacular.[10]

Furthermore, the OSw vernacular of the Christian elite in Sweden seems to have taken influences from the south-west and the orthography of literary OSw may have become based on a model more emblematic for Götaland or middle Swedish dialects than Uppland dialects. Thus, innovations common to ODa and OSw may not be quite as representative of the whole eastern area as we might think. Certainly, for instance, monophthongisation had not reached the speech areas from which emigration to Estonia, the coasts of Finland and northern Sweden originated around the thirteenth century.

[10] In order to mitigate a most obvious anachronism the vowel epenthesis in word-final syllables, as in OSw 2. pers. acc./dat. pl. personal pronoun *iþęr* 'you' ~ODa *idhær*/*edhær*, will be reversed, as in OESc **iðr* (see [P5]: subs. 1.1. nt 6).

All things considered, these eastern variations are no more fundamental than similar ones documented in ON in the west. From a bird′s eye view, OESc may also be understood as an approximate historical stage of language development, probably best represented by key mainstream dialects of the tenth and eleventh centuries, which transmitted innovations from the Øresund Region and central Götaland to the adjacent regions in present-day Denmark and Sweden, extending further to the fringes of Eastern Norway.

2.2 Preliterary Finnic and its contacts to Germanic and Scandinavian

The phonological changes to Scandinavian during the examined period were profound, complicated and at times rapid, not to say cataclysmic, while the changes from LPFc to the documented Old Finnish (of the sixteenth century) occurred at a much more sluggish pace. Therefore, 'Finnish' ('Fi') clearly should have the potential to function as a prehistoric 'camera' for the conservation of mirror-imaged snapshots of extinct forms of Scandinavian, as once pronounced. Nonetheless the field of study is complicated, the use of loanword evidence is inherently prone to hasty conclusions and the interpretation of that evidence requires a profound understanding of both Germanic and Finnic language history.

The key period here is the rapid change in Scandinavian roughly from 500-850 CE. The following period is difficult to access through loanwords; OESc vernacular in the late ninth century is very similar to the archaic dialects of twelfth and thirteenth century Swedish settlers. According to a long tradition in Finnish etymology, loanwords tended to be classified in two main groups: "old" "Germanic" (previously even called "Gothic") borrowings and medieval "Swedish" borrowings. This dichotomy has been variably mitigated in standard handbooks. LägLoS (intro p. xxx), for its part, uses "jüngeres Lehnwort" without distinction for anything which its authors believe comes after 500 CE, without prejudging whether the etymology is OSw, Middle Low German, Old Gutnish, OESc or even ASc. While SSA also does not attempt to arrive at a more precise chronology for borrowings between 500 CE and the thirteenth century, for this period it makes abundant use of "sk" = "skandinaavinen" (Scandinavian), when the source appears different from attested OSw.

2.2.1 Research into Finnic borrowing from Germanic and preliterary Scandinavian

The lexicology of Germanic-Finnic language contact has taken centre stage in historical linguistics from its inception. As soon as the late seventeenth century, an understanding of how cognate vocabulary differed from borrowed lexical items began to develop (Häkkinen 2013). The pivotal study paving the way for essentially modern loanword research in this field was the dissertation by the Danish scholar Vilhelm

Thomsen (1869) *Den gotiske sprogklasses indflydelse på den finske* (The influence of the Gothic language class on the Finnic). With regard to the older Germanic etymologies in Finnic, Thomsen′s work has stood the test of time remarkably well; its principal deficiency was its historical and geographical contextualisation of the source and target languages and the related interdisciplinary aspects. Thomsen maintained that the source language for ancient Germanic borrowings in Finnic was Gothic and the area of language contact was located inland to the south of the Gulf of Finland. This flawed position was rightly contested by the Finnish researcher T.E. Karsten (1915, 1921, 1922, 1926, 1943), who argued that the borrowings arose in a very different context. He maintained that the source languages for the oldest Germanic borrowings were Pre-Germanic and PGmc and that the main area of contact was to the north of the Gulf of Finland.

Karsten′s work was not recognised properly until after his death, much later in the twentieth century. During his lifetime, Karsten had few supporters, two exceptions being Hugo Pipping and Felix Hartman, and to some extent the Fenno-Ugrist Karl Bernhard Wiklund. The community of Fennists in Finland rejected or ignored Karsten′s proposals and, led by Thomsen's son-in-law Emil Nestor Setälä, continued to follow the old school (Bentlin 2010: 154–156). Similar trends in research are evident in the historical lexicology of Finnic loanwords from Baltic languages (Junttila 2016: 13–37).

The reluctance of the Finnish research community at the time must be understood in the context of inflamed disputes over language policy and the linguistic identity of the newly independent Finnish nation state, which contaminated the discussion. Karsten, who correctly postulated the time and place for the borrowings, made some other untenable assertions that made those parts of his argument susceptible to criticism; namely he claimed a continuity of preliterary Scandinavian language in Finland. He argued that the Swedish-speaking communities that inhabited coastal areas in Finland when medieval records began had descended from the assumed early Metal Age speakers of PGmc in southern and western Finland (Lena Huldén 2002: 22–23).

Given that research contemporary with Karsten dated the arrival of Finnic speakers to the Iron Age, an assumption of continuity from PGmc to Swedish entailed that the precursor of the Swedish language would already have been spoken in Finland when the precursor of the Finnish language arrived. For scholars sympathising with the national romantic Fennomanic movement, who wanted to see speakers of Swedish ultimately assimilate into a linguistically Finnish monoculture, this was a quite unpalatable interpretation of language history (Lena Huldén 2002: 14–28). Working in this political climate it is understandable that scholars such as Setälä (1926: 158f; 1933: 489) and Toivonen (1927) were inclined to disbelieve Karsten. Covered by these two authorities, other Fennists and Fenno-Ugrists in Finland altogether ignored Karsten′s and Wiklund's discussion on appellatives borrowed from PGmc. This suppression reserved the field to scholars with inferior knowledge of Finnish language history.

Karsten himself relied mainly on Germanic sound change, which limited the value of his argumentation.

A monograph by Björn Collinder (1932) brought this debate to a close. After this was published, Karsten′s ideas were not only rejected and ignored in Finland but also stigmatised as inappropriate scholarship for four decades (Bentlin 2010: 157–161). Germanic-Finnic loanword research was thus deprived of native expertise on Finnic language history during an important period of progress in research on phonological theory, and also unable to benefit from these remarkable advances.

The situation changed rapidly in the early 1970s, mainly through the groundbreaking achievements of the Finnish Germanist Jorma Koivulehto. He successfully surveyed the lexicon for less obvious sound substitution practices. His improved understanding of the phonotactic and morpho-phonemic constraints in Pre-Finnic and Proto-Finnic allowed him to explain how some relatively counterintuitive substitutions were plausible. He made particular advances in analysing the substitution practices for consonant clusters. Remarkably, Koivulehto had the advantage of being among the first scholars in the field with a Finnic mother tongue. Secondly in order to verify less obvious sound substitutions, Koivulehoto systematically used parallel cases, a procedure that had proven essential in applying the comparative method. Thirdly Koivulehto used structuralist phonematics to justify his assumptions of allophones in the source language. Last but not least, Koivulehto was able to stratify the older Germanic borrowings in Finnic convincingly and to prove that there were layers of loans from several periods, including both relatively late loans with Proto-Scandinavian characteristics and very early Germanic loans, some even antedating PGmc.

Similarly to Thomsen, Koivulehto′s vulnerabilities were in the historic contextualisation and interdisciplinary aspects of his work. In particular Koivulehto was very amenable to assertions by contemporary archaeologists, which have not endured the test of time.[11] Koivulehto′s early research is summarised and systematised in Tette Hofstra′s (1985) dissertation, while some of his later etymologies have been included in LägLoS. A fair share of Koivulehto′s own work is available in German in *Verba*

[11] Archaeologist contemporaries of Koivulehto were stressing continuity of settlement and population at the expense of migration. Some also took this to exclude language diffusion. The only gap that had been perceived as allowing for immigration into Finland from Estonia, notably the Pre-Roman Iron Age, was closed in Meinander (1969), after which continuity of Pre-Finnic population was assumed all the way back to the Mesolithic settlement of the comb-ware culture. This school of thought dominated the interdisciplinary seminars in Tvärminne 1980 (Gallén 1984) and Lammi 1997 (Fogelberg 1999), where Koivulehto participated. Koivulehto saw some merit in contextualising the oldest etymologies in the framework offered by the contemporary archaeologists. Today scholarship is inclined to favour a Bronze Age arrival of the Proto-Finnic language in the Baltic Sea region along a south-eastern route and an encounter with an existing Pre-Germanic population on both shores of the Gulf of Finland (Lang: 2015, 2018; Lang & Pajusalu: 2017).

Mutuata (Koivulehto 1999) and supplemented in various languages in *Verba vagantur: Jorma Koivulehto in memoriam* (Holopainen et al. 2016); the latter also contains some papers about his life′s work and an etymological index.

The idea of a common Northwest Germanic fully articulated allophonic front umlaut has, to the best of my knowledge, never been explicitly challenged with ample Finnic loanword evidence from the Proto-Scandinavian period. Yet the conflict between the hypothesis and the data is manifestly evident. It is easy to find scores of Proto-Scandinavian etymons which contain a fronting trigger, show front umlaut in OSc, and constitute 'loan originals' (i.e. original source lexemes for loans) of back-vocalic words in Finnic. Two good etymologies from the beginning of the alphabet would be Finnic *arki* 'ordinary mundane day' < **arki* ← **argīn-* > ON *ergi* (or ← **arg*^{i}*jōn-* > ON *ergja*) and Fi *autio* 'desolate' ← **auþ*^{i}*j-* > ON *eyði*/OSw *ödhe*, (LägLoS, respective entries). Even among the many cases similar to these two, where a fronting trigger must have been present, traces of fronting in the originals are absent in the loanwords. The same observation is generally true for palatalising diphthong assimilation, as investigated in [P1]. Hence, there are no grounds in this data to assume salient allophonic fronting in the originals.

Even if this argument could be criticised for being *ex silentio* it seems quite compelling due to the great number of borrowed items. Regardless of how the uncertain cases are treated, there are hundreds of borrowings older than OSc. Of the 1401 entries in LägLoS (passim), Kallio (2015b) counted 518-1077 and Kuokkala (2017) counted 517-1075 "Germanic" (i.e. 'Pre-Scandinavian') lexical borrowings (as opposed to possibly later or even earlier loans). While the lower end of the interval (517/518) represents etymologies with no alternative datings or other signs of uncertainty, the number of actual etymologies is surely higher since a fair proportion of the uncertain etymologies must be valid by a probability count. Furthermore, the corpus is still growing owing to new etymological research. For sure, the bulk of these etymologies cannot be older than the purported NwGmc allophonic umlaut; for instance, Aikio and Aikio (2001) counted only 114 Germanic etymons meeting criteria for early (i.e. clearly older than Proto-Scandinavian) borrowing.

This issue illustrates an area where different sub-disciplines of historical phonology have not communicated well. It is rather obvious that scholars in the field of historical comparative Finnic loanword lexicology have tacitly observed and accepted that umlaut was not realised phonetically much earlier than the syncope era. Yet they have not stepped outside their comfort zone to engage with scholars of theoretical diachronic phonology, who have entertained ideas of very early allophonic umlauts. This issue exemplifies the need to take a diversified and comprehensive approach to the preliterary history of Scandinavian language, and to identify critical intersections between sub-disciplines which apply very different methodologies. This is an aspiration of this compilation thesis.

2.2.2 The periodisation of preliterary Finnic and Finnish

Recent research has revised relative and absolute chronologies of Uralic and Finnic and brought datings closer to the present. The arguments for Pre-Finnic Uralic are accessible in Kallio (2015a: 80ff) and for Finnic in Kallio (2014), while the synchronisation with the chronology of Germanic is accounted for in Kallio (2012; 2015b). According to these views, also recounted in [P1], reconstructed LPFc was just about to start breaking up into diverse dialects in the third century CE, at the dawn of the millennium covered in this compilation thesis.

Moreover, according to the revised Finnic family tree referred to in [P1], 'North Finnic' ('NFc') was still spoken as a cohesive vernacular in the beginning of the Viking Age, at which time the daughters south of the Gulf of Finland had nonetheless split into three proto-dialects (see Map 2). These latish dates are some centuries different from the traditionalist chronology presented by Kaisa Häkkinen (2014: 390) in the same volume where both [P2] and Kallio (2014) were published. The difference may at first glance seem larger than necessary for a terminological reason. Häkkinen simply called the later stages of disintegrating northern Finnic "Early Finnish", thus evading the difficult issue of how to model a binary branching of the language family.

As was briefly introduced in SUBS 2.1.2, the stratigraphy of Germanic loanwords in Finnic requires that the common NwGmc ancestor of North Germanic and West Germanic predates the third-century breakup of LPFc. In fact, the sound change PGmc *$*\bar{e}_1$* > NwGmc *$*\bar{a}$*, which most emblematically marked the emergence of Northwest Germanic as distinct from PGmc, must be backdated some centuries to allow loan originals that reflect this sound change to be contemporary with 'Middle Proto-Finnic' ('MPFc').[12]

Late Proto-Finnic diversification, which resulted in several Finnic proto-dialects, must thus have progressed concurrently with the PSc stage and matured prior to PPSc syncope, which set in around 500 CE. Only that chronology accomodates the Proto-Finnic sound changes, loanword strata and dialect diversification that must have all happened in that narrow interval. The chronologies in TABLE 3, which are faithfully reproduced from the papers, are slightly adjusted in the final synthesis in TABLE 4 to illustrate that, around both sides of the beginning of the Common Era, Northwest Germanic was not only contemporaneous with MPFc but had also briefly been concurrent with LPFc prior to its diversification.

[12] A small number of loanwords from Germanic to Latin have been invoked in favour of a late date for the change of PGmc *$*\bar{e}_1$* to NwGmc *$*\bar{a}$*. The way these borrowings have been interpreted is hardly probative, since such early borrowings must have been mediated by Celtic (Stifter 2010).

Table 3. Periodisations used in [P1] and [P2] to synchronise the chronologies of preliterary Scandinavian and Finnic

Paper [P2]: Period –	**Scandinavian development stage**	**Paper [P1]**	**Paper [P1]: Period**	**[P2]: Finnic development stage**
500 - 200/100 BCE	Proto-Germanic ~ *Urgermanska*	Urgermanska medelurfinska	500 - 200 BCE	Middle Proto-Finnic ~ *(varhainen) keskikantasuomi*
200/100 BC - 200 CE	Northwest Germanic ~ *Nordvästgermanska*	nordvästgermanska medelurfinska	200 BCE - 200 CE	(late) Middle Proto-Finnic ~ *(myöhäinen) keskikantasuomi*
200 - 400	(Early) Proto-Scandinavian ~ *(tidig) urnordiska*	Urnordiska sen urfinska	200 - 350	Late Proto-Finnic ~ *myöhäiskantasuomi*
		Urnordiska litoral urfinska	350 - 450	
400 - 550	(Middle) Proto-Scandinavian ~ *(medel-) urnordiska*	urnordiska Finska viken urf.	450 - 550	Coastal (Gulf of Finland) Finnic ~ *rannikkokantasuomi (Suomenlahden kantasuomi)*
550 - 750/800	Early East Scandinavian ~ *sen (östlig) urnordiska*	tidig östnordiska nordurfinska	550 - 850	North Finnic ~ *pohjoiskantasuomi*
750/800 - 1225/1250	Old East Scandinavian ~ *runsvenska/rundanska*	fornöstnordiska tidig finska	850 - 1225	Early Finnish ~ *varhaissuomi*
1225 - 1375	Old Swedish ~ *klassisk/äldre fornsvenska*	fornsvenska tidig finska	1225 - 1520	Early Finnish ~ *varhaissuomi*
1375 - 1521/1540	Old Swedish ~ *yngre fornsvenska*			Early Finnish ~ *varhaissuomi*
1521/1540 - 1732	Early New Swedish ~ *äldre nysvenska*	nysvenska gammalfinska		Old Finnish ~ *vanha suomi*

The dates for Early New Swedish (1521) and Old Finnish (1540) are both fixed to the publication of the New Testament and thus cannot be reconciled

The chronology may be demonstrated as follows. No long vowel +*ā* (nor any front harmonic twin phoneme +*ǟ*) may be postulated at a Pre-Finnic level of reconstruction, preceding MPFc. The substitution for the Paleo-Germanic long **ā*, as in **sākejan-* (later PGmc **sōkjan-* 'to seek, search') was a shortened vowel, as in Early or MPFc **šakɘ-* > Fi *hakea* 'to seek, fetch'. Another etymologically distinct source vowel (PGmc **ē₁*) in the loan original is seen in the word **käwɘ-* (> Fi *käydä* 'to go, to walk') ← NwGmc **skāw(i)ja-* > ON *skœva* 'to go' (Kallio 2015b: 28; LägLoS: s.v. 'käydä'). The fronted quality may be a substitute for an intermediate vowel quality, which appeared during an assumed development of PGmc **ē₁* > ?**ǣ* > NwGmc **ā* (Kallio 2012: 232), but may just as well be a result of spontaneous front vocalisation in Finnic (Kallio 2015b: 28; [P1]: 250f both with references), as occurred for example in Fi *häpeä* 'shame' < **häpedä* ← **hawïþa-* > fsv. *hāþ* 'shame, scorn, derision etc.' (Koivulehto 1999:17f, 36). Regardless of whether the Germanic source phoneme for MPFc **käwɘ-* had already completed its development towards NwGmc **ā*, or had merely started it, the substitution with short **ä* testifies that the practice of substitution by shortening was still very much productive after PGmc proper and that plausibly the long MPFc **ā*/**ǟ* was yet to develop.

Concurrently with the NwGmc stage, however, a new long MPFc **ā*/**ǟ* did emerge in autochthonous words. This occurred when some sonorous intervocalic consonants in bisyllables were deleted and the preceding short vowel consequently lengthened, such as in **kaŋɘrɘ* > Fi *kaari* 'arc, arch' and **äɣɘrɘ* > Fi *ääri* 'verge'. After this development a long MPFc **ā*/**ǟ* became phonotactically permitted in Finnic, but only in words with a reduced stem vowel in the following syllable. Accordingly, borrowing without shortening became possible by a reduction of the second-syllable vowel, as in MPFc **paatɘ* > **paati* (> LPFc **paatʂi* > Fi *paasi* 'rock bench, flagstone') ← Northwest Germanic **spāda-* (> Middle High German *spāt*) 'spar' < PGmc **spēda-* (Kallio 2012: 232). If the borrowing was accomodated as a Finnic *a*-stem, *ä*-stem or a labial stem, however, a long MPFc **ā*/**ǟ* was still not permitted, resulting in further borrowings with vowel shortening, such as MPFc **kacco-* (> Fi *katsoa*) 'look' ← NwGmc **gāt$^{(i)}$ja-* (> ON *gæta*) 'watch' (Kallio 2015b: 28; LägLoS: s.v. 'katsoa').[13] Even these loanwords were borrowed before the consonant changes which characterised the transition from MPFc to LPFc, such as, in the case of **paati*, the change MPFc **ti* > LPFc **ʂi* (> Coastal Finnic **si*).

[13] In these stem types vowel shortening cannot be used to prove a borrowing before LPFc. While examples represented by Finnish successors such as *haja-* 'disperse(dly)' (< **šaja* ← NwGmc **sājan-* > *sow*) and *hätä* 'distress, emergency' (< **šätä* ← NwGmc f. **sātō* > OSw f. *sāt* 'ambush') must already have been borrowed into MPFc on account of the initial consonant, a word like *havas* 'netting for fishnets' (< **ɦabas* ← PSc m. **χāƀa-z* > OSw m. *hāfęr* 'hoop-net'), with an equally shortened vowel, must have been borrowed later owing to its initial consonant. However, in LPFc long **ā*/**ǟ* became permitted in labial stems later, but yet before the Scandinavian syncope era, as in the example *saatto* 'haycock' ← **sātōn-* > OSw f. *sāta* 'haystack' (LägLoS: Part 1 p. xvii and respective search words).

The breakup of LPFc, which occurred only after these sound changes took effect, must have begun by the third century CE (Kallio 2014: 163f). The date is not fixed in terms of absolute chronology but there is not much room to either antedate or postdate it either. On the one hand, many developments must be accommodated on the timeline between that stage and the PPSc umlaut and syncope; for one, an abundance of PSc loanwords borrowed before those Post-Proto-Scandinavian changes has a narrow northern distribution. On the other hand, a great number of sound changes must be accommodated before the breakup of LPFc, but after the development of PGmc *$\bar{e}_1$ > NwGmc *$\bar{a}$. This suggests that NwGmc emerged rather before than after the turn of the Common Era, the chronology being sequenced as follows:

1) PGmc *$\bar{e}_1$ develops into NwGmc *$\bar{a}$; the precursor of Fi *käydä* is borrowed from *$skāwj$- or *$skǣwj$- (<*$skē_1wj$-) as *$käwɔ$- (before 2)
2) MPFc *-γ-, *-$ŋ$-, *-w-, and *-j- are lost creating a new long vowel *$\bar{a}$/*$\bar{\ddot{a}}$ (before 4)
3) The precursor of Fi *katsoa* is borrowed from *$gātj$- as *$kacco$- (before 5)
4) The precursor of Fi *paasi* is borrowed as *$paati$ (before 5)
5) The sound change MPFc *ti > LPFc *$ʦi$
6) Inland Finnic and Coastal Finnic emerges in a first binary split (ca. 250 CE)
7) Plenty of Germanic loanwords are borrowed into Coastal Finnic
8) Further split of Coastal Finnic into Gulf of Riga Finnic and GFFc
9) Plenty of Germanic loanwords borrowed into GFFc
10) Inceptive north/south split of GFFc
11) Plenty of Germanic loanwords borrowed into northern GFFc
12) Post-Proto-Scandinavian vowel reduction (ca. 475-550 CE) and the great climate disaster beginning in 536 CE.

As regards the breakup of NFc, there are archaeological records which can hardly be ignored. At the dawn of the Viking Age during the eighth century CE, the southern shores of Lake Ladoga in Karelia were populated from south-western areas of present-day Finland. During the same century the river route via the Volga to the Caspian Sea was opened for trade by the eastern Scandinavians. The oldest tree trunks used for construction in Staraya Ladoga (Icelandic "Aldeigjuborg") were uprooted in 753 CE (see [P3]: 175 with reference). This activity provides an explanation for how the Finnic language of the new arrivals around Ladoga could have spread further to the shores of Lake Onega and beyond; it is likely that Finnic-speaking groups took advantage of opportunities offered by the trade route and spread eastwards (Frog & Saarikivi 2015). The eighth century thus marks a *terminus post quem* for the potential of North Finnic to break up. Later, when early Russian historical records appeared, several Finnic tribes were already present along this trade route and Veps, Karelian, Bjarmian, Ingrian, Chud, Tavastian and Finnish language communities were referred to as separate tribes, which indicates a kind of *terminus ante quem*.

Loanwords can be used to reconcile the relative chronologies of the PreSc era with that of MPFc and LPFc, as shown above. This is more difficult to do for the diversification of later Finnic and the sound changes of PPSc, TSc and ASc. While the Scandinavian sound changes of this era were rapid and their chronology is poorly described, the changes in disintegrating LPFc were sluggish and seldom instrumental to dating. In addition, it is possible that fewer lexemes were borrowed during this era.

There are only a few cases of preliterary Scandinavian loanwords with a NFc distribution which are distinguishable phonologically as younger than Proto-Scandinavian. As argued in [P1], there are very few precise and reliable criteria and the majority of potential lexemes point to loan originals without syllable reductions or traces of umlaut. This means that a subset of borrowings that are confined to the north are very early. By implication, as early as the Post-Proto-Scandinavian era, GFFc already had a distinct northern dialect with its own vocabulary, which was capable of absorbing loanwords that did not spread to the south. On the other hand, in the early Viking Age eastern Orthodox words for the first Christian concepts, such as 'cross' **risti* and 'priest' **pappi*, could still spread and be phonologically nativised in the whole Baltic Finnic group, including precursory Livonian and South Estonian, which had been differentiated from Central and NFc by sound changes centuries earlier (Kallio 2014: 163f).[14] As discussed in [P2] (p. 428) nativisation also seems to have happened to the name *Ruotsi*, which first came to denote the seafarer merchants from Svealand (or *Svīþiūþ*). An eighth-century date is plausible for this ethnonym for extralinguistic historical reasons, yet it has spread according to Finnic sound laws into all Finnic branches. In conclusion, the chronology for the breakup of Finnic (TABLES 3 and 4) is not an exact science but a synthesis of mutually reinforcing close approximations, which must tolerate a margin of ambiguity in the order of a few centuries, all depending ultimately on how a language is defined as opposed to dialect.[15]

TABLE 3 above shows the periodisations of Scandinavian/Swedish and Finnic/Finnish used in [P1] and [P2]. That table does not take into account the periodisations used in [P4] and [P5], which are recorded above in TABLE 2 only against the periodisation of Scandinavian language. As a basis for future research, a synthesis representing my latest opinion in the light of this dissertation is recorded in TABLE 4.

[14] 'Nativisation' refers to a process whereby a lexical item is adapted upon borrowing from a closely related sister language or sister dialect in a manner that makes it phonologically indistinguishable from true genetic cognates. In such situations speakers of the borrowing vernacular are familiar with the correspondences found in inherited words and use those in substituting the sounds instead of the phonetically most proximate phoneme. Thus nativised, for the purpose of the comparative method the word will appear to originate from the common ancestral language itself. In a process opposite to nativisation, in similar situations the sounds are substituted by phonetic resemblance, which may lead to sound correspondences that do not match those found in inherited words.

[15] This is a sociolinguistic problem extraneous to the scope of this thesis. For the phonological aspects of this problem see discussion in SUBS 2.1.3.

Table 4. Periodisations to synchronise the chronologies of Scandinavian and Finnic

Paleo-Germanic ‘PlGmc’ *~ äldre urgermanska*	- 250 BCE	Middle Proto-Finnic ‘MPFc’ *~ medelurfinska* ~ keskikantasuomi
Proto-Germanic ‘PGmc’ *~ urgermanska*	250 BCE - 100 BCE	
Northwest Germanic ‘NwGmc’ *~ nordvästgermanska*	100 BCE - 50 CE	
	50 CE - 160 CE	Late Proto-Finnic ‘LPFc’ *~ sen urfinska* ~ myöhäiskantasuomi
Proto-Scandinavian ‘PSc’ *~ urnordiska*	160 - 250	
	250 - 400	Coastal Finnic *~ litoral urfinska* ~ rannikkokantasuomi
	400 - 500	Gulf of Finland Finnic ‘GFFc’ *~ Finska viken urfinska* ~ Suomenlahden kantasuomi
Post-Proto-Scandinavian ‘PPSc’ *~ posturnordiska*	500 - 550	
Early Transitional Scandinavian ‘ETSc’ *~ äldre övergångsnordiska*	550 - 600	North Finnic ‘NFc’ *~ nordurfinska* ~ pohjoiskantasuomi
Late Transitional Scandinavian ‘LTSc’ *~ yngre övergångsnordiska*	600 - 700	
Early Ancient Scandinavian ‘EASc’ *~ äldre förfornnordiska*	700 - 750	
Late Ancient Scandinavian ‘LASc’ *~ yngre förfornnordiska*	750 - 850	
Old East Scandinavian ‘OESc’ *~ fornöstnordiska*	850 - 1225	Early Finnish ‘EFi’ *~ tidig finska* ~ varhaissuomi
Old Swedish ‘OSw’ *~ klassisk/äldre fornsvenska*	1225 - 1375	Medieval Finnish ‘MFi’ *~ medeltida finska* ~ keskiajan Suomi
Old Swedish ‘OSw’ *~ yngre fornsvenska*	1375 - 1521/1540	
Early New Swedish *~ äldre nysvenska*	1521/1540 - 1732	Old Finnish ‘OFi’ *~ gammalfinska* ~ vanha Suomi

Years for Early New Swedish (1521) and Old Finnish (1540) are exact, thus irreconcilable.

In determining chronological precision I knowingly distance myself from the methodological assumptions invoked by Mikko K. Heikkilä (2014a: 27–30; 33–36; 105–132), which result in relative chronologies for borrowing events into Finnic from Pre-Scandinavian at a precision of one generation of language learners. Notably, Heikkilä achieves purported precision by projecting nearly all variation he finds in his data onto a timeline, invariably resorting to a chronological conclusion of a kind that X must have occurred before A and after B. Not overly bothered by circular interdependencies between the chronologies in his sources, Heikkilä permits chronological data of varying certainty inferred from Scandinavian language contact with both Sámi and Finnic, from reconstruction, from dates attributed to runic carvings or just by accepting secondary references at face value. Hence his ostensible precision in absolute dates is the logical consequence of the very congestion on the timeline that his procedure creates.

Heikkilä is hardly right in accepting this fine-tuned timeline as a true reflection of real-world chronology; rather, the congestion flows logically from his assumptions and methodology, as they are applied to variation in his uneven data, at times based on uncertain or isolated etymologies. His initial assumptions about how sound change progresses also serve his purpose well; he invariably describes each sound change as an instant atomistic event ("ljudövergång") where one phonetic entity is exchanged for another. By taking this neogrammarian approach he fails to make full use of the evolution of phonological theory since the advent of structuralism in the mid-twentieth century.[16]

2.3 Scandinavian syncope and umlaut

In the transition from Proto- to Old Scandinavian, target vowels in an initial main stressed syllable were assimilated into triggering vowels in a following syllable by means of regressive metaphonic front umlaut, rounding umlaut and vocalic breaking. In this way, fomer allophones frequently ended up as new vowel phonemes. These phenomena of regressive vowel assimilation are similar, but not identical, to the fronting processes in many branches of West Germanic. Some two centuries ago Germanic umlaut was first uncovered and configured by Rasmus Rask, followed by

[16] See my comments on weaknesses in some concrete examples in Heikkilä′s research in [P1] (p. 254 nt 15 and p. 255 nt 17). One example, where a precision of a few decades alleged by Heikkilä may be shown to err by half a millennium, is given in SUBS 3.5.6. This criticism should not be taken to mean that all Heikkilä′s chronologies are wrong; on the contrary, many of them are in line with the latest research. One such positive example is Heikkilä (2014a: 61f) on the issue of Northwest Germanic loans in Middle and Late Proto-Finnic (cf. Kallio 2014: 163), discussed at the beginning of the present subsection. SUBS 3.4.3 below (with NT 35) refers to colleagues′ criticism of methodological problems pertaining to Heikkilä′s treatment of borrowed toponyms.

Jakob Grimm (Rischel 2002: 127; Basbøll & Jensen 2015: 161f). Some fundamental problems still remain unsolved, including the relative chronologies, the mechanism of transmission and the question of how, or even whether, the genesis of new phonemes depended on alteration in umlaut triggers, such as their deletion or possible reduction.

In [P4] and [P5] the relative chronologies of umlaut and syncope are examined in great detail, aiming to improve the phonological understanding of umlaut and its reliance on trigger reduction. The subject is theoretically specific and exigent, which justifies a more extensive survey of some key issues of research history than has been possible in the articles, first on the chronology of syncope and then on the past discussions on front umlaut. Research history on rounding umlaut as far as it amalgamates with breaking is briefly outlined in [P5] (subs. 4.2), and with regard to its reversion in [P5] (subs. 6.6). For further discussion of rounding umlaut see Widmark (1959; 1991: 138–151; 2010: 275–287) with references.

2.3.1 Syncope, syllable weight and syllable structure

As concerns the chronology of syncope, theoretical prosodic research made great progress in the later twentieth century. One key question affected by new findings is when medial *-i-* was lost in the light-stem syllable structure of **ta.li.ðō* 'I told, counted' and **ka.ti.lōz* 'kettles', and how this differed from when medial *-i-* was lost in the corresponding heavy stems **dō.mi.ðō* 'I deemed, judged, sentenced' and **ban.ði.lōz* 'bands'. The debate on this issue was long encumbered by a tacit and manifestly false assumption that the prosodic environment "after light syllable" would be uniform in terms of exposure to syncope. Accordingly, syncope of *i* "after light syllable" was falsely thought to have happened concurrently in all contexts, that is, whether medially as in **ta.li.ðō* or word-finally as in **sta.ði* 'place' (acc. sg.). This was contrasted against syncope of *i* "after heavy syllable", which was thought to have happened earlier, at a point in time equally unaffected by whether the vowel occurred medially as in **dō.mi.ðō* or word-finally as in acc. sg. **gas.ti* 'guest' (acc. sg.). Thus, by demonstrating that syncope was late "after light syllable" in **sunu** 'son' (DR 356 Sölvesborg, DR 190 Helnæs and Ög 136 Rök and some equivalent examples) it was erroneously held that it must have been late also "after light syllable" in **taliðō*. Based on this irrelevant runic evidence, Eduard Sievers (1878: 69, 111–113) and Herbert Penzl (1951) were long criticised (cf. Steblin-Kamenskij 1959: 106, 109; Bibire 1975: 199; Hreinn B. 1982: 8) on false premises for assuming the reverse, namely that syncope in **taliðō* would have been earlier than in **dōmiðō*.

In contrast to such obsolete research, modern prosody scholars have emphasised that exposure to syncopation of a vowel following a main stressed syllable not only depends on what precedes it but also on syllable structure and on what follows it. Joseph Voyles (1982: 275) stated 35 years ago that deletion of a medial /i/ after a light syllable had been an early rule, but only when it was "followed by a long syllable". Paul Kiparsky (2009: 42) represents a modern and unequivocal position on the topic:

"the claim that syncope took effect first after heavy syllables in North Germanic receives no support from historical phonology".

As regards the runic evidence so often invoked, it is not possible "to have the runic material describe an inner chronology of the first syncope period" (Riad 1992: 115).[17] Without attestations presenting both *terminus post quem* and *terminus ante quem* for the different syllable types, the runic argument is severely lop-sided. In Iverson and Salmons (2012:110–111), for instance, definitions of *terminus ante quem* by Tomas Riad (1992: 108–109; 113–114) have unfortunately been quoted as approximations of absolute chronologies, an imprecision which on closer inspection has significant implications for their argument.

As raised already, the blocking of syncope in bisyllabic light stems, as in acc. sg. **sunu** in the Sölvesborg, Helnæs and Rök inscriptions, is not probative for the issue regarding medial syncope in trisyllables. In the bisyllables syncope is expected to be inhibited in the first period for particular reasons that did not apply to trisyllables at all: the putative bisyllabic light-stem targets contained only two moras, the measure of exactly one minimal foot, which also formed the condition for word minimality (Lahiri et al. 1999: 358). Word-final consonants in PSc always counted as weightless (P. Kiparsky 2009:16, 19f, 23). Therefore, a TSc word with the structure CVC, which would have been the result of such syncope, did at the time count as monomoraic and would thus have contravened the bimoraic word minimality condition.[18] According to this analysis, a significant delay of syncope would have applied to some word-final light syllables immediately following main stressed light syllables, as in acc. sg. *s*t*a*.ð*i*, but certainly not in a position preceding a heavy syllable, as in *t*a*.l*i*.ð*oo* or in *k*a*.t*i*.l*ooz*. Here, modern prosodic theory unambiguously points to syncope during the early period (Lahiri et al. 1999: 357–358), at a time not much, if at all, different from that applying to *d*oo*.m*i*ð*oo* or *b*an*.ð*i*l*ooz*.

A modern understanding of Proto-Scandinavian metrics is openly accessible in the prosodic analysis of Tomas Riad (1992) recounted in Lahiri et al. (1999) and revisited in P. Kiparsky (2009: 16–19). Riad (1992: 111, 113f) also deals with an attested delay backed by Germanic parallels, by which syncope of less sonorous vowels, such as /u/, was later than that of more sonorous vowels, such as /a/. This delay, discussed for instance by Skomedal (1980: 124–126), Grønvik (1998:15–26) and Myrvoll (2012:

[17] There is one relatively reliable attestation of a word with medial syncope between a light syllable and a heavy following syllable, namely **sate** [satte:] < **satiðɜ̄* (Gummarp, KJ 205; B 141). Even that reading is not conclusively probative for the subject matter since it could have been exposed to premature haplological syncope between homorganic obstruents.

[18] As shown by much later vowel deletion in acc. sing. *s*un(u)*, accomplished in the ninth century, the consonant must have started to carry weight also in word-final position at the latest before the end of the LASc period. This also concerned sonorants outside main stressed syllables at an earlier point in time, shown by inhibited vowel deletion due to second-syllable weight in ON acc.sg *k*e*.t*il* (instead of *+ketl)*.

25–28), is significant for my analysis of the chronology of umlauts in the vowel system ([P5]: subs. 3.3).

Despite the very clear achievements of prosodic research, up until recently many texts on front umlaut has continued to uncritically reiterate that syncope in **taliðō* supposedly was later than in **dōmiðō* (see for example Grønvik 1998: 21, 64–65; Schulte 1998: 51, 187; Iverson & Salmons 2004: 87–88; 2012: 108–111; Widmark 2010: 44f cf. 47; Fertig 2013: 17), even if the traditional foundation for such an analysis is long since invalidated.[19] Thus, on this issue, different research traditions on syncope (and hence umlaut) do not seem to communicate well.

In [P4] and [P5] the analysis is theoretically cognisant of the modern prosodic research tradition and yet, insofar as description is concerned, it is inclined to assume later medial syncope after a light than a heavy syllable. This conclusion relies neither on the traditionalist research tradition nor on a negligent interpretation of runic inscriptions. Rather, the delay is inferred from the fact that during early umlaut, a short trigger vowel taking up the second mora from the left should have possessed some prosodic feature suitable for sustaining a system of non-reduced vowel qualities. In [P4] and [P5] this feature is proposed to be (relative) prominence, which also is likely to have delayed syncope.[20]

Even based on the proposed analysis, the relative prominence postulated for such a second syllable would not have endured or delayed syncope for very long; after a reassignment of prominence making this position weak, syncope would still have occurred well inside the early syncope period, covering the sixth and seventh centuries, rather than in the later ninth-century period of vowel reduction (see [P4]: subs. 6.2 as well as [P5]: subs. 6.5.2). This is evident in conditions pertaining to the rounding umlaut. A medial *-ï-* in its capacity of a blocker vowel for *u*-umlaut was deleted in a position before a bimoraic third syllable when the secondary rounding umlaut became distinctive in Early Ancient Scandinavian, as in 3. pers. pl. pret. ****ta.li***‖*ðǫ̊n* > *tǫlðu* ‘they counted, told’.

To conclude, the prosodic analysis in [P4] and [P5] relies on the *status quo* of prosodic theory insofar as syllabification and moraicity is concerned, but in response to compelling data, the analysis of prominence assignment has been remodelled. These conclusions and their implications for Proto-Scandinavian prosody merit further

[19] No such oversight is attributable to the argument presented by Paul Kiparsky (2009: 21–26) in support of a reverse sequencing of syncope, based on prosodic theory with some indirect backup of runic evidence, however ambiguous. A short delay after heavy rather than light syllables would have been caused by the sixth-century constraint disallowing main stressed syllables with more than two moras (ibid. 2009:17–21). Kiparsky′s reasoning is referred to in [P4] and [P5], but is shown to have impliactions for the output of breaking instead of fronting.

[20] In the context of this analysis, medial syncope of **i* may have been simultaneous regardless of the two syllable types, but only if syncope exceptionally targeted a relatively stressed vowel as proposed by Braroe (1979: 50).

discussion (see SUBS 3.5.5.2), including whether they constitute the only possible solution to the problem, as configured.

2.3.2. A logical configuration of hypotheses regarding Scandinavian front umlaut

When Rask and Grimm first accounted for the Germanic phenomena of regressive vowel assimilation that was coined umlaut, they could hardly have imagined that "almost two centuries later scholars would still be struggling with the basics of this sound change" (Liberman 2001: 85). Various conundrums apply to both the West and North branches of Germanic (Liberman 2007: 13f). As regards the North Germanic branch, at least, the theoretical issues cannot be isolated from the descriptive puzzle of how *i/j*-umlaut came to be distributed in the attested Old Scandinavian lexicon. The research history on this issue may roughly be divided into three periods; the first period preceding Axel Kock (his first publication on this was Kock 1888 and his theory was summarised in Kock 1911–16) and the second consitituting the dispute around Kock′s theory, leading to the formulation of Hesselman′s (1945: 3–15) hypothesis, which perhaps is the most quoted one dissenting with Kock. The third stage, characterised by firm criticism and outright rejection of Kock′s theory, followed soon after the advent of phonology as a discipline theoretically separate from phonetics (Penzl 1951: 7–12).[21] After this, followers of Kock′s theory have been very hard to find, to the effect that Hreinn Benediktsson (1982: 5) in his landmark article *Nordic Umlaut and Breaking: Thirty Years of Research (1951–1980)* identified rejection of it as the only point of agreement on front umlaut shared by the linguists of his time, while dissenting mutually on all other issues involved.

For an exhaustive retrospective history of older research, readers are referred to the work of Szulc (1964), selectively and analytically complemented as regards front umlaut in Schulte (1998: 20–58). A very useful theoretically configured synopsis of research on both the North and West Germanic umlauts is available in English in Awedyk (1975: 24–35). Concise accounts concentrating on Scandinavian front umlaut include Steblin-Kamenskij (1959: 105–109) and Bibire (1975: 199–205), complemented by a selective update in Reid (1990: 23–32). Extensive bibliographies are found in Widmark (1991) and Schulte (1998) with extensions into the relevant research on West Germanic in Liberman (2007) and Iverson and Salmons (2012).

Denunciation of Kock′s theory has not been challenged since the early post-war period and is thus only briefly recalled in [P4] (subs. 2.1). This unanimity continues to be reflected in the works of Robert D. King (1971: 2f), Paul Bibire (1975: 200–201), Timothy Reid (1990: 23f), Ottar Grønvik (1998: 50f), Paul Kiparsky (2009: 1), Gre-

[21] From a purely theoretical perspective, the third stage sets off with V. Kiparsky (1932) and Twaddell (1938), who are discounted here as they discussed Old High German.

gory K. Iverson and Joseph C. Salmons (2012:103), and David Fertig (2013: 11).[22] Astonishingly in this context, hardly any papers on Scandinavian umlaut do not relate to Kock′s theory by initially stating some reason for dissent; in the words of Jørgen Rischel (2008: 199) "[Kock′s] theory still seems to enjoy the status of being the implicit frame of reference". This may partly be due to the lack of better explanations to replace it, as well as to the status Kock′s analysis has in obsolete but commonly consulted handbooks (Noreen 1923 [1884]: §66; Heusler 1967 [1913]: §59; Wessén 1968 [1941]: §3). Against this background an account is included as follows.

Kock presented his classic three-period theory based on data configured in TABLE 5, where the double vertical line 'ǁ' marks the extension of the bimoraic main stressed foot (hereafter called the 'main foot') and the underlining marks moraic segments (of course, this denotation was not used in Kock′s generation). With the problem limited to these examples, an apparent regularity cannot escape the eye. When a palatal trigger vowel had followed a heavy syllable (i.e. it had been situated outside the main foot), front umlaut occurred in the data (TABLE 5, column 1), and when it had followed a light syllable (i.e. it had been within the main foot), front umlaut did not occur in the data (column 2), except where the trigger was exempt from syncope, in which case it had functioned as a fronting trigger (column 3). Kock translated these regularities into a three-period chronology. Each phonological context correlated with a specific stage of language development, with front umlaut in each stage causally related to syncope in a different way.

Table 5. Set of data to illustrate Kock′s hypothesis, organised by syllable weight

	1. Heavy first syllable, front umlaut accomplished	2. Light syllable and deleted trigger, no front umlaut	3. Light syllable and remaining trigger, front umlaut accomplished
first class of weak verbs	**d<u>oo</u>ǁm<u>i</u>ð<u>oo</u>* > *dœmda* 'I deemed, sentenced' 1. pers. sg. pret.	**t<u>a</u>l<u>i</u>ǁð<u>oo</u>* > *talða* 'I told, counted' 1. pers. sg. pret.	
masculine *i*-stems	**<u>gas</u>ǁ<u>t</u>iz**/**<u>gas</u>ǁt<u>i</u>* > *gestr*/*gest* 'guest' nom. sg./acc. sg.	**st<u>a</u>ð<u>i</u>zǁ/*st<u>a</u>ð<u>i</u>ǁ* > *staðr*/*stað* 'place' nom. sg./acc. sg.	
instrumental suffix **-il-*	**b<u>an</u>ǁd<u>i</u>l<u>oo</u>z* > *bendlar* 'bands' m. nom. pl.	**k<u>a</u>t<u>i</u>ǁl<u>oo</u>z* > *katlar* 'kettles' m. nom. pl.	**k<u>a</u>t<u>i</u>ǁl<u>a</u>z* > *ketill* 'kettle' m. nom. sg.

[22] For earlier opinions see the very thorough account of Aleksander Szulc (1964: 19ff).

Accordingly, the first wave of syncope would have hit unstressed triggers following heavy syllables, and as an immediate consequence would have caused front umlaut ("syncope with umlaut"). In an ensuing development, triggers following light syllables would have lost their relative degree of stress and later ultimately undergone syncope, most notably, however, at a stage when the umlaut mechanism had meanwhile been disabled ("syncope without umlaut"). Later still, palatal trigger vowels that had escaped syncope altogether would again have become active and, despite being spared reduction, would have caused secondary front umlaut ("umlaut without syncope").

In the article mentioned above, Hreinn Benediktsson (1982) sharply scrutinised the post-war efforts in umlaut research, which had alternately drawn on structural and generative phonological theory. By then it had become clear, he argued, that front umlaut could not have taken place "as an immediate and direct consequence of the loss of the conditioning vowel". This had been Kock′s assertion concerning front umlaut during his postulated first period, but according to the negative consensus formulated by Hreinn it was "hardly compatible with the tenets of any phonological theory"; hence there were no grounds to assume that in that period, "there was no umlaut if the vowel was not syncopated" (ibid.: 5).[23] Hreinn, however, identified fatal weaknesses in the new hypotheses, which had aspired to address largely the same configuration of data as in TABLE 5. He managed to demonstrate that, despite initial optimism based on a strong faith in new tools of linguistic theory, some of the traditional or classic problems had tended to persist "or continually to reappear, in one guise or another, and thus to continue to defy a convincing solution" (ibid.: 1ff).

There have been a great variety of mutually conflicting attempts before and after Hreinn′s contribution to translate the observations of TABLE 5 into an analysis accounting for the enabling conditions, mechanisms and sequential chronologies of front umlaut. In the following description of umlaut solutions, reflecting the background research made for [P4] and [P5], the research situation in the decade preceding Hreinn′s milestone paper is identified as a flexible baseline. His sober criticism of earlier post-war research, in concert with Venås′s (1973) and Bibire′s (1975), is acknowledged and previous research referred to only in order to sketch a background, partly in retrospect through secondary sources. Besides selected works from that decade, including Cathey (1972), Braroe (1979), Skomedal (1980) and Voyles (1982), later works are referred to directly.[24]

The aim is to show that the dissent identified by Hreinn Benediktsson was not reduced after 1982, but on the contrary, it increased. The continued lack of scholarly consensus is manifest by the fact that no post-war hypothesis enjoys significant support. Readers are referred to how recent papers comment upon the last runology-

[23] On the name Hreinn Benediktsson, see note 3.

[24] The earlier works of Suzuki (1982a, 1982b) are not discussed because Suzuki′s (1995) later work on the issue supersedes them.

based monograph on *i/j*-umlaut and phonologisation by Michael Schulte (1998; Howell 1999; Rasmussen 2000: 158; Liberman 2001: passim), upon the status of umlaut research in general (Liberman 1991: 125–127, 2007: 13f; Suzuki 1995: 252; Lahiri 2000: 102) and upon each other′s assertions (Voyles 2005: passim; P. Kiparsky 2009: 42–45; Iverson & Salmons 2012: 103–104 & note 1; Fertig 2013: 18). The research on Scandinavian *i*-umlaut is indeed nowhere close to a *status quo*, but rather somewhere between states of confusion and of resignation.

There are two diverging trends in the literature, which do not dialogue well with one another. On the one hand, clear attempts to include the most recalcitrant data fail to meet requirements of phonological theory. This typically applies to the unjustified use of scalar language with reference to stronger and weaker fronting (Skomedal 1980, Widmark 1991) or statements on syllable weight without a supporting prosodic analysis (Grønvik 1998). On the other, hypotheses that aspire to utilise the latest theoretical linguistic insights often fail to account for ill-fitting data, such as front umlaut by long trigger vowels or the '*iʀ*-umlaut'.[25] This particularly applies to proposals based predominantly on prosodic postulates, such as those of Steblin-Kamenskij (1959), Suzuki (1995) and Lahiri (2000).

As concerns the data, one common view, obviously in the light of the parallel developments in Gutnish and relevant daughters of West Germanic, is that the non-occurrence of front umlaut when a presumptive palatal trigger had been present (column 2 in TABLE 5), rather than its occurrence (columns 1 & 3), needs explaining (cf. similar observation in Rasmussen 2000: 144). How have the unexpectedly un-umlauted non-palatal vowels in column 2 been explained? Most standard solutions may be configured into two main categories (with further subcategories): either phonetic post-contrastive fronting is thought to have affected all target vowels initially, or alternatively only some of them. The idea of reversible 'sub-phonematic' fronting was a major innovation of structuralist phonology which has been developed to generate new solutions ever since. Yet, there is no consensus as to whether phonetic front umlaut (once having surfaced) was later actively reversed by a backing trigger (i.e. underwent "Rückumlaut" or 'reverse umlaut' as in category A below) or somehow relapsed in 'umlaut reversion', either without (category B) or accompanied by (category C) a depalatalising trigger change. Solutions that assume no original umlaut, even post-contrastively (category D), draw contradictory conclusions from the same data: the trigger has been seen as either too heavy or strongly articulated, or too light or weakly articulated, to cause front umlaut. Others have implicated the target, which has been seen as too light or too weakly articulated to sustain a front umlaut.

Some solutions are difficult to capture under the configuration below because their explanatory thrust lies largely outside the phonological scope of sound change. These include hypotheses by James E. Cathey (1972) and Joseph B. Voyles (1982, 2005),

[25] For full definition and discussion of '*iʀ*-umlaut' see 'Section 3' in [P4]

which are briefly commented upon in ‘subs. 7.4’ of [P4]. These aside, the main alternative phonological explanations for the non-occurrence of front umlaut when a presumptive trigger had been present within the main foot are the following:[26]

A. Phonetic *i*-umlaut occurred both in heavy and light syllables but was reversed in the latter, because before phonemicisation of the targets in heavy syllables rebacking was induced in light ones upon early deletion of the original trigger vowel and its resulting replacement by an unsyncopated non-palatal vowel moved up from the third syllable, which triggered active “Rückumlaut” or reverse umlaut (Penzl 1951; 1984).
B. Phonetic *i*-umlaut occurred both in heavy and light syllables but was reversed in the latter with no significant change in the trigger vowel, because
   i. in an environment where the umlaut trigger was still present after delayed syncope,
      a. phonemicisation was suspended, and the allophone could and did remain identified with the umlaut free source phoneme, which enabled a relapse of phonetic fronting before the trigger was lost (Dyvik 1973; Skomedal 1980);
      b. in an environment where the umlaut trigger was still present after delayed syncope, the phonetic fronting rule lost its derivational vitality, leading to the rule′s demise and to automatic reversion to the base form (Iverson & Salmons 2004; 2012 applicable to bisyllabic *i*-stems);
   ii. a syncopation rule was inserted or reordered in the synchronic grammar, and came to apply before the umlaut rule (King 1971; 1973);
C. Phonetic *i*-umlaut occurred both in heavy and light syllables but was reversed in the latter, because after phonemicisation, which was limited to targets in heavy syllables, rebacking in light syllables was induced by a meaningful change in the conditioning vocalism: notably the original trigger vowel
   i. was weakened in terms of clear fronted articulation after delayed syncope and catalysed, in tandem, rebacking through a dependent metaphonic relationship, “omljudsväxling”, passive “Rückumlaut” or ‘umlaut reversion’ (Hesselman 1945; Taylor 1953–57; Widmark 1991);
   ii. was replaced, upon its deletion, by an unsyncopated non-palatal vowel moved up from the third syllable, which, by ‘reverse umlaut’ similar to a development in A, sealed off an ongoing rebacking similar to that in B.i, while allowing for *ja*-stems and indicative presents of strong verbs to abort that backing process (Elmevik 1993 applicable to trisyllables);

[26] Strikingly, the new analysis proposed in this thesis shares most elements with the solutions proposed by the only two women on the list, Eva Ejerhed Braroe (1979; cf. [P4]: subs. 6.2.) and Gun Widmark (1991; [P4]: subs. 3.3).

iii. merged phonematically with /a/ after delayed syncope, which led to reverse umlaut (Reid 1990);

iv. lost its umlauting potential due to merger with a vocalised /j/, which had already discharged its own umlauting capability (Schulte 1998);

v. was lost owing to suffix analogy, that is, the already syncopated suffixes of the heavy stems replaced the unsyncopated allomorphs of the light stems by means of analogy, and with the fronting rule still synchronically applicable, the disappearance of the trigger caused the fronting of the target vowel to relapse (Fertig 2013 and applicable to trisyllables Iverson & Salmons 2012);

D. No *i*-umlaut occurred in the light syllables in question to begin with, because

i. for prosodic reasons syncope after light (relative to heavy) syllables was earlier and by the time *i*-umlaut became productive, the trigger vowel had been lost after light syllables only (Sievers 1878; P. Kiparsky 2009);

ii. no front umlaut occurred unless the intervening consonant became palatalised (Liberman 2007)

a. and unless that palatalised consonant remained outside the perimeters of the main stressed syllable; because a single consonant after light syllable was ambisyllabic, it did not satisfy the condition of extra-syllabicity and would not front the preceding vowel (Basbøll 1993);

iii. in *i*-stems, in many grammatical cases, a nasalised *ĩ* stood in triggering position and was too weakly palatal to trigger umlaut; subsequently resultant forms without umlaut were levelled to the whole paradigm (Elmevik 1993 applicable to bisyllabic *i*-stems);

iv. for prosodic reasons the productivity of *i*-umlaut in light syllables (relative to heavy syllables) was delayed – until the trigger had mostly been lost in that environment – notably because

a. the accentuation of the triggering vowel (Kock 1911–16; H. Pipping 1922; Braroe 1979) was too strong,

b. the metrical position of the triggering mora was non-prominent (Rischel 2008),

c. the accentuation of the main stressed target syllable was too weak (Bibire 1975; Riad 1988),

d. in light syllables a separation of the trigger by open juncture remained (Steblin-Kamenskij 1959);

v. for prosodic reasons the productivity of *i*-umlaut in light syllables (relative to heavy syllables) was inert, notably because

a. a foot-internal restriction applied (Suzuki 1995),

b. the triggering vowel stood in a short open syllable (Grønvik 1998),

c. the main stressed target syllable was too light (Lahiri 2000),

d. the conditioning vowel in general and from the outset was not phonologically specified for the triggering fronting feature when positioned within the main foot ([P4] & [P5] in this thesis).

The reader may wish to compare this logical configuration with the discussion in ‘subs. 2.2’ of [P4] ‘Typology of Traditional Solutions’, which may be understood as an analytic synthesis of these explanations.

3 The papers and their methodologies

3.1 On the papers

The methodology of the five papers is not uniform. Papers [P4] and [P5] are based on historical phonology and mostly invoke non-controversial etymologies, mainly cognate lexical items inherited from Germanic. The tool kit includes the comparative method and internal reconstruction, supplemented especially in the case of [P5] by prosodic theory and the Contrastive Hierarchy Theory (CHT). While the discussion in [P1] revisits etymology more closely than these two papers, sound history is still its main focus, in particular 'sound substitution practices' in lexical borrowings and how these practices can point towards the reconstructed sound shapes of the loan originals. A number of well-known loanword etymologies are also improved, including their datings. In [P2] and [P3] toponyms take centre stage; only a few relevant appellatives are discussed. The focus is on examining the merits of alternative etymologies; issues related to the development of their sound shapes are addressed to support the argument.

Paper [P2] (pp. 400–403) is to a certain extent self-sustaining in its account of its theoretical foundation. In [P1] (p. 242) and [P4] (subs. 1.1) this issue is addressed explicitly but much more briefly, while in [P3] such information is largely omitted. In [P5] the initial theoretical assumptions are rather extensively accounted for (see 'subs. 1.3' and 'Section 3') but, as the CHT is not universally familiar to phonologists, the references to it in [P5] will be supplemented with some illustrations of its application in SUBS 3.5.2 below.

3.2 Logical interconnections of diverse methodologies

In this compilation thesis, the sound history of preliterary Scandinavian is tackled using a variety of methodologies, emblematic for a number of auxiliary or sub-disciplines of diachronic linguistics, most notably toponymic studies, loanword studies and some more theoretical methodologies of historical phonology, including the comparative method and internal reconstruction. One manifestation of this approach is that relationships between the papers are not logically clearcut or deductive. What constitutes an initial assumption in one paper may turn up as a hypothesis to be tested in another. To give one example, the customary view that lack of front umlaut when a short palatal trigger has followed a light syllable is taken for granted when discussing the possibility that the name *Åland* derives from *+awi-landa-* ([P3]: 293). Yet, a reservation regarding this assumption is given new attention in [P4] (also [P5]: sections 2 and 5), where a more refined hypothesis on the regularities of these exceptions is tested against appellatives (see the example words in 'Table 6' in [P4]: **hawïðō* > *háða* 'I implemented', **fawîzō* > *færra* 'the fewer' and **fawîþu* > *fæð*

'fewness'). This could be seen as a methodological problem, but it may be more fruitful to admit that it appears as an epistemic problem of historic phonology in general whenever a poorly understood and poorly documented stage of language development is examined. Where no new empirical data can be generated, the only option is to run new tests to better accommodate existing data, which is fragmentary.

Clearly, this consecutive swapping of approaches in the papers makes extracting a synthesis more challenging. There is no methodologically straightforward way to make iterative use of the comparative method and later philological description, internal reconstruction and phonological theory, the testimony of loanword evidence and toponymic data. In reasoning which draws on all of these, subjective scholarly judgement cannot be totally avoided. It helps to keep transparent track of what constitutes unknowns, initial assumptions, and hypotheses. If a hypothesis is postulated and tested within one logical setup, tacit *prima facie* assumptions about other unknowns cannot go unaccounted for in other parts of the equation. Even if a cross-disciplinary procedure is not methodologically optimal, it may still add value for poorly described stages of language development, when all imperfect data is to be taken into consideration. The problem is essentially inalienable from the fragmentary nature of the data and methodological rigour alone cannot overcome this.

The direct contribution of toponymic etymologies in [P2] and [P3] to phonological reconstruction is obviously modest. Nevertheless, besides their phonological utility, correct etymologies for toponyms provide a basis for the use of loanword evidence in [P1] and [P5], because they help to put the borrowing of appellatives in context. The study of toponyms may be seen as part of the interface between theoretical linguistic reconstruction with its relative chronologies and real-world human history, where language was spoken in precise geographical locations at certain points in time. Bearing all five papers in mind, it has been possible to cautiously synthesise some new views in SUBS 2.1, 2.2 and 4.3 in this chapter. These syntheses go beyond the papers and indicate how the results of the reconstructive efforts may correlate to language communication and human history. This may be the most interesting aspect for the broader public, even if it inevitably represents less reliable results.

3.3 Scandinavian-Finnic loanword phonology

3.3.1 Abstract of paper [P1], its aims, publication forum and main findings

The title of [P1] translates into "Eastern Scandinavian development of the Proto-Scandinavian diphthong *ai* and palatal *r* in the light of Finnish sound substitutions." The paper systematically examines sound substitutions in Finnic borrowings of preliterary eastern Scandinavian appellatives that contained a descendant of the Proto-Scandinavian diphthong *ai*. One aim is to recover regularities among the correspondences between the diphthongs which are presented as irregular in LägLoS. To do this, the paper tests the refined reconstruction of the LPFc vowel system recently

argued by Petri Kallio (2014: 160–161), which includes a proto-vowel */ë/~[ɤ̞]. The methodological criteria for recovering substitution practices are discussed, as well as the chronology that applied to the appearance and demise of those practices. All this has possible implications for our understanding of preliterary eastern Scandinavian sound systems.

It is shown that the occurrences of common Finnic *ai*, *äi*, *ei*, and Estonian *õi* within the preselected loanword data are not very useful for verifying a Proto-Scandinavian chronology of the Scandinavian diphthong assimilation *ai* > *æi* > *ei*. Many loanwords are invalidated for the purpose altogether, since Finnic front vocalisation occurred in them after borrowing, while the remaining valid substitution practices may not be ordered on a neat timeline with only one practice productive at each given time. However, it is demonstrated that Finnic hardly substituted PSc **ai* with **ei*, which also appeared implausible *a priori*.

The conclusions are very cautiously formulated. The great margin of uncertainty which the material and the methodology requires may be seen as a result in itself. Keeping this reservation in mind it is noteworthy that words such as *raiti* '(bed)sheet' ← **braiðijōn-*, *paittV-* (noun and verb) 'stain, pickle' ← **baitij-* and *napakaira* 'auger' ← **naƀagaiz-* may be dated relatively late and thus thought to suggest that palatalisation in their eastern loan originals was also later than previously believed. This stands in contrast to the fact that diphthong assimilation is generally assumed to have occurred by late PSc times, at least in the west; however, the chance of a substitution of NFc **ai* for a somewhat fronted Scandinavian **äi* cannot be ignored.

A LPFc velar diphthong **ëi* is reconstructed in the borrowings **lëikka-* 'cut' ← **blaikijan*, **këikku-* 'sway, teeter' ← **skaik-ōn/-ijan* and **këit-* 'isthmus, embankment, demarcation' ← **skaið-*. All these cases in Finnic where a diphthong **ëi* must be reconstructed reflect Proto-Scandinavian loan originals with *ai*. While the sound substitution itself is clearly back-vocalic and does not indicate incipient palatalisation, the distribution data in Finnic are quite wide and clearly point to borrowing before the umlaut period. This diphthong does not occur in inherited words (Kallio 2018).

Furthermore, clarity is sought on the features of preliterary Scandinavian 'palatal *r*', inspired by sound substitution in the words *kaira* 'gimlet, auger, etc.' and *napakaira*, which both appear in the preselected data. Early sound substitution with NFc */r/ cannot be taken as evidence for a loan original containing an approximant in mid-first-millenium Scandinavian. Internal evidence unambiguously points to a fricative, which is argued not to have been palatal and hardly trilled.

The paper was presented at a conference on Swedish language history, "Svenska språkets historia 13" in Umeå in May 2014. It was published in 2016 in Swedish in the peer-reviewed conference volume *Studier i svensk språkhistoria 13. Historia och språkhistoria*.

3.3.2 Methodology

Finnic evidence is often invoked in Scandinavian etymological dictionaries and handbooks in an unsatisfactory way.[27] The cited research on Finnic evidence is frequently obsolete and the ability of the authors to question their sources often poor (Heikkilä 2014a: 26). Just as it is generally in historical phonology and lexicology, the most common mistake is to jump to conclusions on the basis of look-alikes, that is superficial phonetic semblance. Rigorous scrutiny is needed to avoid the pitfalls involved in reverse engineering the substitution practices and their chronologies. This means starting from adequate reconstructions, considering all possible sound substitutions and taking into account possible adaption into the phonotactic structures of the target language. Parallel cases and counterexamples must be considered and the chosen hypothesis weighed against other economical ways of explaining the data.

For the purpose of this dissertation, the method applied in [P1] may be called 'historical comparative loanword lexicology'. This methodology was developed and applied in the Helsinki school, represented in this text above all by references to Jorma Koivulehto, Petri Kallio and Holopainen et al. (2016). Phonological rigour is prioritised for dating purposes, with the distribution of cognates in the language families as supportive indicative evidence, for instance where several parallel examples can be invoked. In ancient borrowings the turnover of the vocabulary makes the distributional aspect of the data alone somewhat unreliable.

A postulated 'sound substitution practice' has to be phonologically plausible and not in manifest conflict with recognised substitution practices in other analogous contexts. While substitutions in lexical borrowings were largely governed by phonetic regularities, they were bound by equally regular phonematic and phonotactic constraints of the target language and by nativising habits. Accordingly, sound substitutions may not always appear phonetically obvious at first glance. In order to verify a substitution practice, the sound system of the target language must first be understood

[27] This applies to many classic examples of Finnic loanwords that appear widely in the literature: the word *äiti* 'mum, mother' is not borrowed from Gothic or Old High German (LägLoS: s.v. 'äiti') but from a Scandinavian original (as argued in [P1]: 252 and in SUBS 3.3.3 below). Further, there is no need to assume that the word *joulu* 'christmas' would contain an unparalleled reflex *+jo-* of a PSc vowel resulting from *u*-breaking (DEO: s.v. 'jul'; AEW: s.v. 'jól'; LägLoS: s.v. 'juhla' vs. justified doubt in VAEO: s.v. 'jul'). Notwithstanding that the diphthong happens to sound like modern Icelandic the word may be a much older borrowing (← PGmc **jeulō* or PSc **jeulu*) with the substitution of Proto-Finnic **jo-* for an impossible sequence *+je-* (Hirvonen 1997: 57–59), and a possible vowel-harmonic raising of the stem vowel, which also occured in *huilu* 'flute'← **swiglō*. Moreover, the coincidence that Proto-Finnic **kuningas* resembles a putative PGmc original (for which Gothic provides no evidence), which has become a classic and anecdotal show-case for Germanic-Finnic loanword studies, obscures the probability that the borrowing is younger, as is correctly pointed out in VAEO (s.v. 'konge'). Yet, the claim in VAEO (s.v. 'øl') that the word *olut* 'ale, beer' is of Indo-European age does not hold water, as explained in [P5] (nt 30).

and the lexicon scanned for phonological constraints and comparable loanwords. Ideally, each substitution should be supported by one or two parallel examples. This requirement ultimately depends on the reliability of the etymology in question, the status of any counterexamples and the best competing explanations. Due to the relatively small lexical corpuses available for loanword studies, exactly parallel phonological environments are quite rare, so the relative degree of equivalence must often be assessed.

One aspiration in [P1] is to define the limitations of this methodology, explaining for instance circumstances where more than one substitution practice could have been productive at the same time. A concise account of this is warranted and may be enhanced here by some further exemplification.

The raw data shows mere correlations between successor phonemes, that is, later phonemes which descend from the phonemes present in the borrowing event. These correlations correspond to past substitution practices, but the practice and its chronology has to be reverse engineered. The data does not without interpretation tell us the mutual chronology of two correlations or whether a change in a substitution practice also reveals a phonological change in either the source or the target language. Neither does it reveal whether the changes in the source language, if any, were superficially phonetic or represent structural phonological change.

These uncertainties have considerable implications for dating a borrowing event. At all times three timelines rather than the obvious two must be mastered: one for the sound changes of the source language, another for the sound changes of the target language and (as too often forgotten working in a neogrammarian mindset) a third for the changes in substitution practices. Often, a change in substitution practice may be concurrent with a sound change on either of the two other timelines, but this is not always necessarily the case; the practice itself may change for more sociolinguistic than phonological reasons and different substitution patterns may be practiced concurrently due to different contact zones between distinct dialects. Moreover a substitution practice may conversely be unaltered despite significant sound change on one of the other two timelines.

In [P1] it is assumed that a substitution practice will not easily change in the face of minor phonetic changes as long as a bilingual speech community identifies past transparent borrowings and the correlation of phonemes that they represent. Under such circumstances, a well-established substitution practice may linger on much longer than phonetic proximity would justify and in effect turn into a nativisation rule akin to nativisation between dialects of closely related sister languages (Aikio 2007; cf. NT 14 above). It is easy to imagine a scenario where a temporary loss of continuity in language contact (and plunge in collective bilingualism) may disrupt such a nativisation habit, after which a new substitution practice would be established without any sound change. It is also possible that dialectal variation in different contact zones and disruption of loan nativisation would coincide. A new phonetically motivated substi-

tution practice may be taken up in a contact zone where the speech community did not rely on the existing nativisation rule practiced elsewhere, thus creating two different correlations for synchronously borrowed words.

With such elements of uncertainty, and factoring in the possibility that substitution practices may overlap on a timeline (see criticism of Heikkilä at the end of SUBS 2.2.2), it is essential to differentiate less ambiguous chronological markers from more ambiguous or even illusive ones. A borrowing may be reasonably dated only if its characteristics happen to permit the application of two reliable criteria (for the earliest and latest possible date, respectively) or several indicative ones. Chronologies for the borrowings can only be improved and contribute to refining Scandinavian sound history under such rigour. Naturally, this process may yield the opposite result, namely that the precision drawn from the material to date is found to have been exaggerated.

Another difficult methodological problem, addressed in passing in [P1] (p. 242), is the use of single occurrences of a correlation between successor phonemes. Any claim for a correlation to be interpreted as a past substitution practice should be substantiated by at least a couple of comparable cases, constituting parallels for each other; this must remain the general rule, as stated in [P1] (nt 2). The non-probativity of an isolated hapax legomenon case is not however absolute; it all depends on how to assess any conceivable alternative explanations. The borrowing *napakaira* is a case in point (H. Pipping 1922: 165). Limiting the argument to Finnic (as opposed to Sámi) data, only the loanwords *napakaira* and *kaira* seem to unambiguously demand an early date for the substitution ASc *z* → NPFi *r*, and since the two words may have influenced each other they may only be counted as mutually supportive parallels with reservations. Yet it is clearly unthinkable that a bisyllabic ON *nafarr* ~OSw *nafuar(e)* through loan substitution could be enhanced by two further syllables and coincidentally by the etymologically correct velar obstruent and the etymologically correct diphthong *-ai-*, both of which had been lost in late Viking Age Scandinavian; thus a later date is impossible. The question is, rather, how long a hypothetical bilingualism could remain aware of the meaning of the two lexical elements present in a compound, perhaps still articulated in ASc as **nað-gazz* *'navel-auger', allowing for a borrowing by separate translation and re-compounding of the Finnic loanwords *napa* 'navel' and *kaira* 'auger, etc.', both well attested cognate loan etymologies. In [P1] this possibility is discarded as implausible. Most notably it burdens the explanatory economy with a quite problematic extra assumption without alleviating it much, since the loanword *kaira*, owing to its back-vocalic diphthong, still requires that the substitution ASc *z* → NPFi *r* is significantly older that the OSc development into vibrant *r*. In a similar way, single occurrences are admitted in [P4] (p. 34) and [P5] (subs. 4.1.2 and 4.2), with alternative explanations accounted for and discarded, to support the postulates reached by reconstructive methodology.

Research to date has identified most recoverable Scandinavian loan etymologies for appellatives preserved in Finnish. While some of these etymologies may still be

wrong and others badly described, Jorma Koivulehto′s efforts to ensure that regular sound substitutions are evaluated more rigorously has advanced research by a quantum leap. Yet, many uncertainties remain and there is no escape from continuing to weigh probabilities. There are simply too many unknowns, too little primary data and too many methodological pitfalls involved. Hence, while searching for new etymologies for appellatives was not a main objective of this study, scrutinising obscure and badly described ones by fine-tuning the methodology was a key task.

3.3.3 Observations on contemporary studies

The state of research at the time of writing [P1] is well documented (on diachrony) in Kallio (2012) and (on etymology) in LägLoS (1991-2012), as well as in Koivulehto (1999, 2002). Other recent etymological works not covered by these include Bentlin (2008a), Kallio (2008) and Schalin (2004). These are some examples of ongoing work to recover etymologies in the same research tradition. A proposal by Mikko Heikkilä in (2011) also deserves a mention in this context. Works published after [P1] include Kallio (2015b) and the dissertation of Santeri Junttila (2016) on Baltic loanwords in Finnic, which is of special value for understanding the evolution of best methodological practices in evaluating proposed borrowings into Finnic. A number of solid loan etymologies by Jorma Koivulehto were posthumously edited and published by Petri Kallio in Holopainen et al. (2016: 456–463).

A paper that should have been taken into account in [P1] is Pajusalu (2010), because it significantly affects the analysis of the loanword Fi *äiti* ‘mother’ < **äitei* ← PSc **aiðijōn* > ON *eiða* ~ Runic OESc obl. **aiþu**. In the light of the data in Pajusalu (2010: 330, 332) there must have existed a South-Estonian cognate to the Finnish word. The match is exact to the extent that the retained stem vowel, much like some Finnish dialects, indicates a long LPFc vowel, or diphthong **äitei*, which is highly unusual and thus original. The reconstruction is supported by the Leivu dialect in an exclave in Latvia, with the attested form *äid'ie*. Because South Estonian is the Finnic relative farthest from Finnish, the loanword should have existed already in LPFc.

The methodology employed in this research tradition is far from trivial. Even with the exercise of caution and a good knowledge of the research tradition, small logical flaws may jeopardise the result (see NT 27). A very recent example from a chapter in the same volume where [P2] was published is a case in point. Here Kaisa Häkkinen (2014) attempts to date the borrowing of Fi *auskari*/*äyskäri* to approximately the Viking Age: she assumes that the borrowing must be older than a monophthongisation of OESc *ǫu* into long OSw *ǿ*. Setting aside the descriptive problem emanating from the fact that this monophthongisation has not, even to date, occurred in many pertinent contact dialects of Swedish, there is the methodological issue of the third timeline (as explained above in SUBS 3.3.2), which Häkkinen does not discuss at all; it is not enough to identify a sound change in the source language but in order to declare the

old substitution practice dead, a new alternative practice, against which it may be contrasted, would have to be identified.

Even if it is probable that 'Medieval Finnish' ('MFi') may have had a front-rounded mid-monophthong /ø:/, it is far from certain (Kallio 2017: 12). If it existed, it would soon have become the diphthong [y͡ø], which we know today. Yet it is not at all easy to find an example of this diphthong appearing in the vocabulary as a substitute for etymological Scandinavian *au* > *ǫu* or its descendants. Rather we seem to find *-ou-* as in *lounia*, *louppi*, *lousata* and *loutti* (SSA: respective search words), presumably borrowed from Swedish dialects with a preserved diphthong *ǫu*/*öu* [ɞu]. In clearly late borrowings, the diphthong *-øy-* is very ambiguous. It occasionally could contain a substitute for a late monophthong, as is probably the case in *pöykäri* (dial.) 'bugbear' ← Sw **spökare* (cf. Sw *spöka* 'to haunt' and *spökeri*). At least in some cases, however, this correlation Fi *öy* ↔ Sw *ö* could perhaps conceal a substitution for a dialectal diphthong, in that case hypothetically rendering *lɞus* 'loose' → Fi **lousa* 'ibid.' with later spontaneous Finnish front vocalisation into *löysä*.[28] Such front vocalisation seems to be attested in the older loanword *röykkiö* 'cairn, mound' < *roukkio* ← **hrǫuk-* (cf. ON *hraukr* 'haystack'). At any rate the diphthong *-au-* may have lingered on for some time as a substitute for *ǫu* [ɞu] as in *kaupunki* ← (?)ASc/OESc **kɞupung(ʀ)* and *lauantai* 'Saturday' ← (?)ASc/OESc **lɞuga(ʀ)dag(ʀ)*. In conclusion, Häkkinen may be right to exclude a medieval borrowing and may be aware of valid reasons for it, but in her text she does not account for them.

A similar problem concerns the *terminus post quem* postulated by Häkkinen. She assumes that *-z-* in an original **aus(a)kaz(a)* older than the Viking Age could not have been substituted with a contemporaneous Finnic/Finnish *-r-*. This may perhaps be the case, but we are not told what the alternative substitution could have been. We may suspect an **-s-*, as occurs in some much older borrowings in positions not preceded by the main stress, exemplified by LPFc **lambas* 'sheep' ←**lambaz-* (n.), or alternatively an **š* > **ɦ* > *h*, as attested after the main stress, exemplified by Finnic **keihäs* 'spear' ←**gaiza-z* (m. nom. sg.). Yet these substitutions cannot be demonstrated to prevail into the seventh or eighth century. Quite conversely, it seems that the new substitution practice, counterintuitively, may have come into use before the phoneme had evolved into a rhotic approximant in the source language, as thoroughly shown in [P1] (pp. 253–255) and in SUBS 4.1 below regarding the Finnish borrowing *napakaira* ←**naƀagaiz(a)-*. This word can hardly be as late as the Viking Age on account of its syllable structure and its diphthong *-ai-*.

The early change in substitution practice could be attributed to a change in the target language, such as a laryngealisation of the ceding NFc substitute **-ɦa* into *-ha*,

[28] Though it is less likely, in theory this adjective could be a backward formation of the verb *löysätä* 'to loosen', which in turn could represent an older substitution OESc **løysã* → NPFi **leüsätä* > Fi *löysätä*.

or to a change in the practice itself triggered for more sociolinguistic reasons. In this case, however, the independently supportive evidence of Sámi loanwords does point to an acoustic change in the source language (Heikkilä 2014a: 110–111, 113, 121–122), which would have occurred at least allophonically after a main stressed vowel, perhaps changing TSc/ASc *z into a perceptually less strident fricative [ɻ]. This change would anyway have been by three centuries too early to date *auskari/äyskäri* to the Viking Age.

3.3.4 Errata and corrigenda

On page 250 the Sanskrit form is misrepresented as *péiya* instead of the correct form *péya*. Note that Koivulehto postulates a borrowing from the reconstructed protoform **paiɣas* (LägLoS: s.v. ‘peijaat’).

3.4 Prehistoric toponymy in the Scandinavian-Finnish contact zone

Papers [P2] and [P3] are published as book chapters. While the chapters are self-sustaining and nearly independent, this context is relevant for understanding the reference technique. When reference is made to other chapters of the respective volumes, this is indicated by the fact that years are not used and the name of the author is in upper case. These references thus have no correlates in the bibliography.

3.4.1 Abstract of paper [P2], its aims, publication forum and main findings

Paper [P2] is titled “Scandinavian-Finnish Language Contact in the Viking Age in the Light of Borrowed Names” and constitutes an anonymously peer-reviewed chapter in the volume *Fibula Fabula Fact – The Viking Age in Finland*, the final publication of the interdisciplinary project “The Viking Age in Finland” at the University of Helsinki. The chapter focuses on a selection of toponyms in present-day southern Finland, claimed to represent borrowings between Finnic and Scandinavian from the Viking Age in a broad sense or somewhat earlier. It is a multi-purpose chapter apt for a volume covering cross-disciplinary Viking Age studies that include archaeology, early historical sources, folklore and research on identities, toponymics, historical linguistics, genetics, climate research and pollen analysis.

One aim of [P2] was to present the state of research of Finnish and Swedish place names in southern Finland that have been borrowed from an ancestor of the other language in preliterary times, in order to make inferences on the nature of language contact in those times. Another purpose was to introduce researchers of related disciplines to some methodological issues involved in verifying disputed etymologies for very ancient names that appear to have been borrowed. These issues include bringing methodological clarity to misconceptions of the regularities that generally govern the

phonological development of toponyms and how these may differ from that of appellatives (cf. similar perspective in Koivulehto 2007).

A further objective, more important for the compilation thesis, was to scrutinise and develop some key etymologies, including criticism of recently published reference works in the field (FSB; SPK). The scope is limited to a set of case studies requiring further discussion.[29] For example Swedish *Kjulo* (Fi *Köyliö* & MFi *Kiulo*) is argued to be a borrowing from 'Early Finnish' ('EFi') **Keül-*, while OESc **Tafæistaland* is deemed to be autochthonous. Other names discussed include Sw *Karis* ~ Fi *karja(h)a-* (being compared to ON *Herdalar*), Old Finnish *Ahuen maa* ~ OSw *Alandh* 'Åland', MFi **Roo9̸9̸i* (?<**Roocci*) 'Swedish, Catholic Finnish' ~ OSw *Rōþ-* and OSw *Rȳtzȩr* 'Russian', as well as the eastern names attested in the annex to Codex ex-Holmensis A 41, commonly known as the "Danish Itinerary". Some light is shed on the nature of contacts between language communities, including the time and space in which such contacts may have occurred.

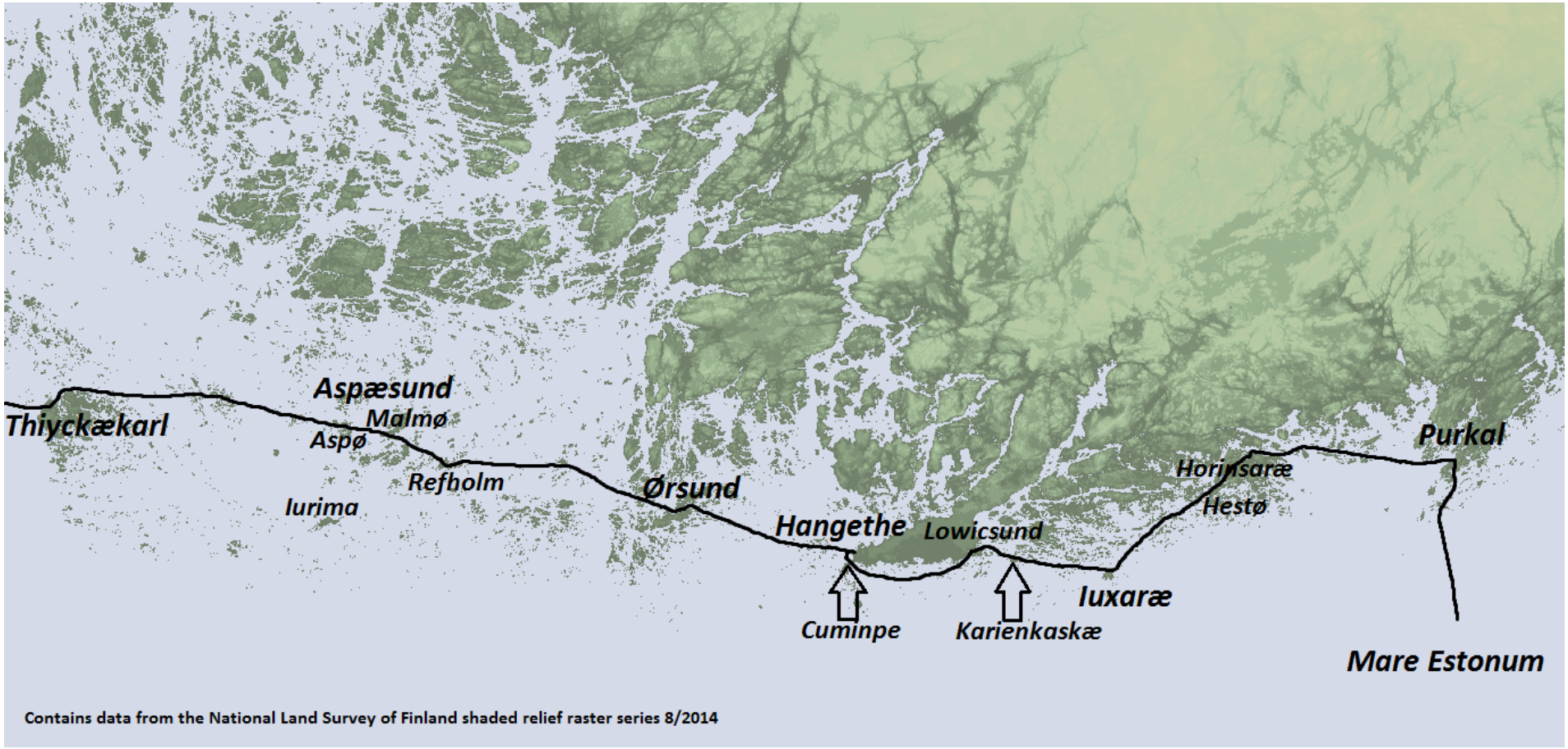
Map 3. Topnyms in Southern Finland discussed in [P2] (cf. [P2]: Map 1)

Map by Frog

The main authors and editors of the book argued that, in the eastern Baltic area, the Viking Age spanned from 750 CE to 1250 CE. These unconventionally wide-ranging dates were arrived at via their interdisciplinary approach to prehistory. In the discipline represented by my chapter, the method and the material does not usually allow for dating a borrowing event to the Viking Age even with the enlarged precision of 500 years; for this dissertation the precision is relevant as justification of the words "Viking Age" in the title.

[29] The selection is nonetheless relatively representative, as the number of toponyms that are plausibly old and borrowed is not very large.

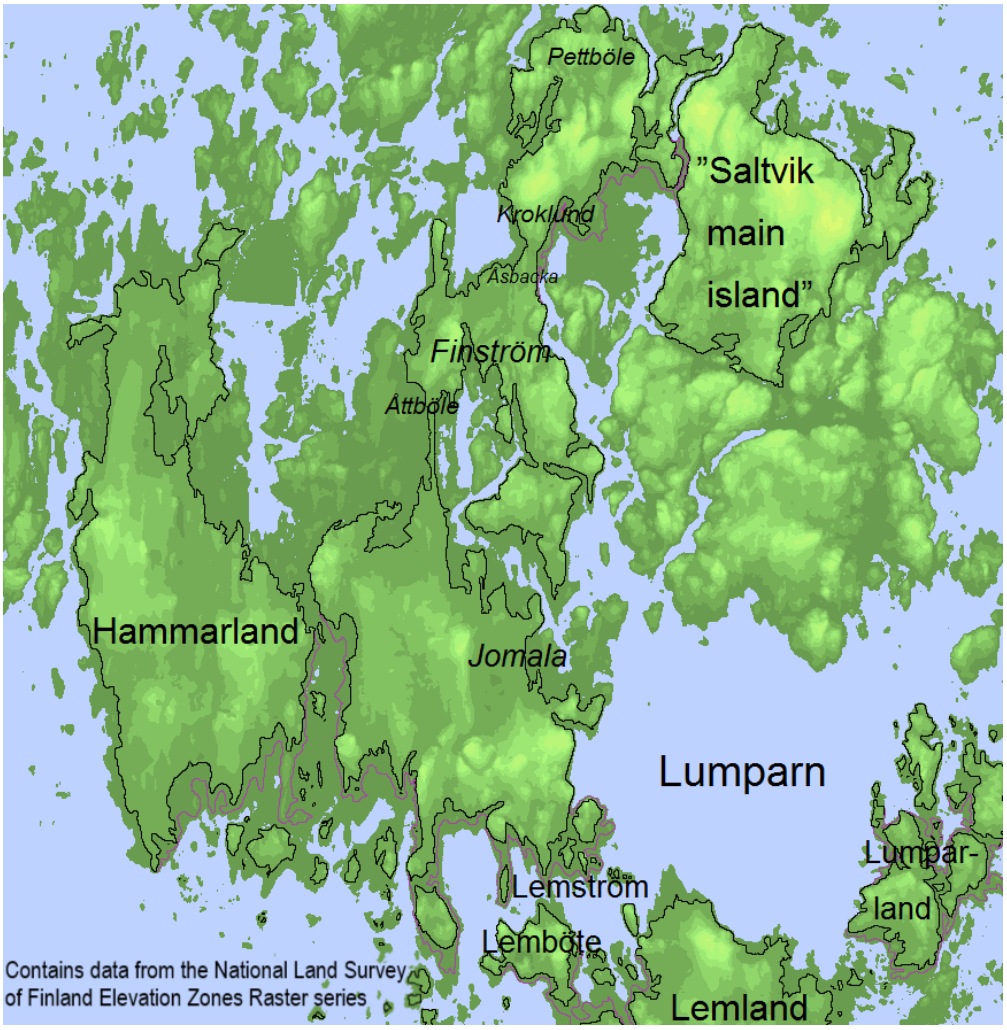
Map 4. Toponyms mentioned in the Danish Itinerary located accorded to Zilliacus (1994)



3.4.2 Abstract of paper [P3], its aims, publication forum and main findings

The title of the third paper [P3] is "Toponymy and Seafaring, Indications and Implications of Navigation along the Åland Islands." The paper, which underwent editorial review, was written upon a request made in August 2014 by the interdisciplinary project "The Viking Age in Åland" at the University of Helsinki and was published as a chapter in the volume *The Viking Age in Åland – Insights into Identity and Remnants of Culture*. The chapter was written in parallel with my contributions to another chapter (Ahola, Frog & Schalin 2014) in the same volume.

Map 5. Outline of a few selected ancient land masses, including one perhaps called 'Åland' from Pettböle to Lemström, according to an Iron Age shore line (10 m elevation highlighted in a black line; 5 m in pink)



In the chapter [P3] some of the oldest toponyms along the sea routes in present-day Åland are examined, to place them in their chronological context. It was enhanced as concerns ON sources, cultural identity and folklore through contributions by Frog. Phonological assumptions play a key role. New arguments are proposed to clarify a case emanating from a work by Lars Hellberg (1987) that a few of the oldest topo-

nyms in the Åland archipelago might belong to a stratum of seafaring names, which can plausibly be dated according to the eastern route of the Viking Age. The discussion in [P2] on the older alternatives for the prehistoric origin of the names *Åland* and *Ahvenanmaa* is deepened in [P3]. This reflects an evolution of my interpretation since 2012. A new possibility is proposed to explain the name *Åland* in the relatively late context of other Viking Age seafaring names, such as *Hammarland*, *Lemland* and *Lumparland*, and possibly *Styrsö*, *Järsö*, *Skedholm* and *Slemmern* (see [P3]: Map 1), considering that it first was a name of a former land mass with since altered shorelines (cf. MAP 5). Other names discussed include *Eckerö*, *Geta*, *Jomala*, as well as *Lemböte* and the other names from the province of *Åland* attested in the Danish Itinerary.

In the paper the appellatives ON m. *vikingr* and f. *viking* are discussed, and the etymology of the Finnish loanword *reitti* 'route' (< EFi **reitti* 'sea route, path') is revisited. Arguably it belongs in a prehistoric context relevant to the discussed toponyms. A main implication for a synthesis is that in this geographical context it makes sense to assume language contact after Proto-Scandinavian but before the twelfth-century Swedish settlement.

3.4.3 Methodology

The research in [P2] and [P3] is not always typical toponymic scholarship. The fragmentary and ambiguous nature of the data pertaining to the prehistoric era in Finland is a consequence of the remoteness of the period in focus, a high turnover of toponyms and the relatively late dates of first attestation. Moreover, large parts of the country, including the Sámi-speaking interior and long stretches of the coastline, were settled (or resettled) for agriculture (and thus their localities named) only after the establishment of a medieval tax-collecting system and the associated settlement structure. Therefore, it is very difficult to sift settlement names in Finland that predate Christianity with methodological rigour. The risk of circular reasoning looms large; dates are determined and naming bases contextualised depending on correct etymologies, while establishing etymologies may be very difficult without prior knowledge of the naming context and date.

Toponyms younger than the twelfth century CE can often be dated more reliably. The change is clear-cut for names borrowed from EFi/MFi into OESc/OSw, because systematic naming, including large-scale borrowing, started with Swedish settlement. This continued at least to the early or mid-fourteenth century, when the potentially emigrating populations were decimated. During these times, settlers predominantly from provinces in (or adjacent to) eastern Svealand turned the heavy clay soils of former pastures around river outlets and elsewhere in the coastal areas of southern and western Finland into cultivated fields. The toponymic data preserved in the modern Swedish dialects are ample here, enabling systematic treatment in conformity with modern toponymic research, as shown in the works of Åke Granlund (1956), Ritva Liisa Pitkänen (1986 [1985], 1990), Kurt Zilliacus (1989, 1990), Gunilla Harling-

Kranck (1990), Ainiala and Pitkänen (2002), Lars Huldén (2002) and Jan Selén (2017) and documented in FSB. Where existing Finnish names were not adopted and adapted, autochthonous naming conventions and types have been shown to correspond well to those used in Sweden in this same medieval period. The same holds true for naming practices in the Åland Islands (Hellberg 1987). Moreover, we are fortunate to have a settlement context preserved in some names which refer to specific categories of newcomers, perhaps in a subsequent wave and often from other areas of origin, with an ethnonym containing a reference to their provenance: *Gestrik(a)-*, *Dalkar(la)-*, *Helsing(ja)-*, *Tjūst(a)-*, *Got(ta)-*, *Önning(ja)-* and *Finn(a)-*.[30]

Where borrowing occurred and the EFi loan originals had been terrain names, their naming basis can often be reconstructed and associated with topographic features of the locality at a certain stage of shoreline displacement, as justified by Ritva-Lisa Pitkänen (1986 [1985], 1990: 139ff).[31] An assumption that the loan original should be at least as ancient as the Swedish settlement is plausible for such original terrain names, but cannot be unreservedly extended to borrowings for which also the loan original is a settlement name. There are good reasons to believe that, after the fourteenth century, Finnish and Tavastian farmers have continued to settle in the areas where Swedish ultimately prevailed as the dominating language.

While the theoretical basis adhered to in [P2] and [P3] is not adressed in [P3] it is to a certain extent accounted for in [P2]. The basis of toponymic research is documented generically in Kiviniemi (1990), Zilliacus (2002) and Ainiala, Saarelma and Sjöblom (2008), but it must be borne in mind that it is only partly applicable. Papers [P2] and [P3] are case studies based on small corpuses of ancient contested etymologies and that an aim of the papers is to evaluate, improve and/or revise proposed etymologies rather than to systemise and classify large name corpuses. For etymologies that are assumed to predate Christianity, the scarcity of analogous data introduces a great degree of uncertainty. Hence verification criteria for an etymology must be calibrated carefully, also against each other when they might point in different directions; obviously, a procedure which often permits several possible explanations cannot be

[30] The author makes the case for adding *Finn(a)-* to this list as a designation of Christian settlers encouraged by the church to move (in this case) from the *Finland* or *Suomi* province in an article (Ahola, Frog & Schalin 2014: 238) not included in this dissertation. Names beginning with *Finn(a)-* extend to parts of *Nyland* where neighbouring *Tavastians* rather than far-away *Finns* would have been expected to settle. In the same locations Finnish dialects display traits from the west, even to a quite conspicious degree. Of course, names beginning with *Finn(a)-* could equally refer to Swedish speakers from the archipelago of Finland, *Finska skærin*, including migrants from *Åland*.

[31] Especially names of inlets, sounds or isthmuses, which are abundant on the Finnish coast, may be dated against past shore displacement, which roughly corresponds to the progression of isostatic crustal uplift of the bedrock (for how to estimate these see [P3] nt 6 with references, noting the corrigendum in SUBS 3.4.5 below). The date would typically not pinpoint the borrowing event but the original naming event in the source language.

given much credence. Under these circumstances, a strong inclination to reject etymologies as speculative is necessary.

Especially in [P2] and partly in [P3] the focus is on evaluating loan etymologies, taken strictly to mean cases where the name itself has been borrowed and phonologically adapted upon borrowing. Translations upon borrowing and the use of borrowed appellatives are excluded from this narrow definition. Proposed loan etymologies are evaluated according to the following criteria, with their application exemplified under each point:

(1) Borrowing is only sought if no good autochthonous etymology can be defended, notably one that fits known naming conventions, with elements that are supported by valid parallels or otherwise demonstrably likely to have existed.

By this criterion the autochthonous Swedish etymology for *Tavast(a)-* 'hämä- (ethnonym)' cf. *Häme* 'name of the province of the Tavastians' is favoured in [P2] at the expense of loan etymologies.

(2) A loan original can be reconstructed, which conforms to the naming conventions of the source language and consists of elements attested in a closely related vernacular or are otherwise demonstrably likely to have existed.

By this criterion a couple of hypothetic EFi originals for the name *Tavast(a)-* are rejected, namely a hypothesised surname +*Tapainen* as well as a verb +*tavasta-(d)a*, the latter allegedly connected to a known seasonal practice 'to go trailing'; no such name or verb is known anywhere close in time or space.

(3) There are no independent indications that the naming elements were not borrowed before the naming event.

For example the parish name *Vammala* is attributed to a now extinct loanword of Germanic origin **vampa*/*vampu* ← PSc **wamba-*, since many other localities which relate to the shape of a 'womb' are named with this element in areas with a Finnish nomenclature. Hence by definition it is not a borrowed name.

(4) The assumed sound substitutions, which follow from the reconstructed sound systems and the later known form of the name, are not arbitrary or in overt conflict with sound substitutions in relevant appellatives.

By this criterion the commonly accepted argument that *Tavast(a)-* 'hämä-', is an adaption of **Tausta-maa* 'hinterland', must be rejected, because the ASc name is reconstructed with a diphthong **Tafaista-*, while the EFi sound shape would have been **tagus-* ([P3]: 416–421). Note that even if we disregard the obvious, namely that the attestation of **Taf[æi]stalonti** in runic inscription Gs13 is corrupt, this form could neither reflect the expected substitute of EFi **tagus-*, nor even represent a substitution of the later Finnish form *tausta-*, which would render +**Taustalonti**.

(5) The semantics and word classes of the reconstructed loan original and the borrowed name must correspond.

This criterion also casts doubt on the explanation by **Tausta-maa*, because the Swedish name was derived from an ethnonym, evident from the byname **Tafæistr** in inscription U722, as well as the inflectional vowel *-a-* (in runic **Taf[ai]st-*a*-landi**), which represents a genitive plural (see [P2]: 418–420). This raises the further difficulty that another extinct ethnonymic Finnic loan original would have to be hypothesised (derived without a further suffix from *+tagus-ta-*).

(6) The name occurs in an area where language contact may plausibly have occurred at the time, supported by parallel cases.

By this criterion it is for now deemed unwise to search for names borrowed from MFi, EFi or Finnic in most parts of southern, western and inland Sweden where Finnish-Swedish language contact is unlikely to have materialised, unless evidence to the contrary appears.

Another case indicating how these criteria can be applied effectively is the very difficult parish name *Jomala* in Åland ([P3]: 286–289). It does not meet Criterion (1) because the proposed compounded naming basis **jū-* + **mal-* *'gravelly horse shore' is not paralleled in contemporary autochthonous naming practice (Granlund 1982: 82). Assuming a borrowing from MFi would seem to fall short of meeting Criterion (2), because *+jumala* 'god', standing alone, is not paralleled in Finnish toponymy. Several Swedish compound names exist with the element *Jumal-* as a first element combining with an autochthonous second element like *-vik*, *-ö*, *-sund* or *-strand*. This condition would activate Criterion (3) and suggest that an appellative **jumal-* was borrowed into settler Swedish and was used to form these names.[32] This is falsified, however, by the phonological Criterion (4), because in the dialects where these names were preserved, the instances of the vowel *[u] are phonetically similar but not descendants of the same OSw vowel (see NT 14 above and Schalin 2014a) so they cannot be cognates. It is therefore unlikely that such an OSw appellative existed during the early settlement period ([P3]: 288). The same criterion also falsifies the autochthonous explanation. Criterion (4) on sound substitution is met, providing that the names in Nyland province were later and borrowed separately from Finnish or from the Swedish Åland dialect.

With regard to names predating the twelfth century, there is not enough data to systemise, geographically group and chronologically stratify place names and naming practices. Criterion (4) may be applied nevertheless because historical phonological methods can be used to reconstruct sound shapes with relative precision. In some

[32] The meaning of such an appellative would be difficult to reconstruct, with the only clues being the attested meaning of Finnic **jumala* and the toponyms preserved in the respective language groups. Reference is made to a non-conclusive digression on this subject on p. 287 in [P3] (chiefly a contribution by Frog).

recent toponymic research, phonological criteria have clearly been overlooked.[33] Hence, in [P2] the methodological discussion zooms in on the intersection of historical phonology and development in the pronunciation of toponyms. The paper makes a basic and empirically reasonable account of how and why the phonological shape of toponyms may develop differently from that of appellatives. In terms of phonology, regularities of sound change may be distorted in toponyms for reasons given in [P2] (pp. 400–403): this may happen in the source language before the borrowing event, or subsequently in the target language.[34]

Not all the sources for such distortions are exhaustively listed in the paper; for instance, a toponym may ostensibly have fossilised a dialectal trait, which later became obsolete in that region. In Scandinavian such examples include toponyms with rounding umlaut (e.g. *Hårga* in Hälsingland or *Hörja* in Scania) in regions where the dialect by now has rounding umlaut reversion. An example in Finnish would be the lateral reflex *-l-* representing the weak grade of **t* in a region where another reflex (a flapped /ɾ/ or elision) would be expected, as in the name *Koliseva* (cf. *Koriseva*). In situations of competing pronunciation, a language learner would learn the toponym from an ultralocal variety while mimicking appellatives from more expansive high-prestige dialects. In examples like this, such local 'distortion' of sound laws may be preserving rather than innovative. Despite occasional claims to the contrary, this does not mean that regular sound change could cease in a set of lexical items because they are toponyms.

Historical phonology is ultimately only one of many disciplines relevant to onomastics and toponymic research. Its contributions should not be underestimated or abused, but nor should its significance be overrated. To take one example, one name explained as a loan older than the period of Swedish settlement is *Tessjö* ([P2]: 408), based on the vowel *-e-* which ostensibly seems to have undergone front umlaut after borrrowing into preliterary Scandinavian from an ancestral form of Fi *Taasia* (Saxén 1910: 42–43). What makes the proposal interesting is the fact that *Tessjö* is located very close to some other Swedish names that have also been explained as borrowings before the settlement period. One of these is Sw *Pyttis* (cf. Fi *Pyhtää*), located near the westernmost outlet of the River Kymi. Saxén (ibid.) wanted to date its borrowing before the

[33] Two relatively new reference volumes on toponyms in Finland (Huldén 2001; SPK) have triggered debate on this. One example of a critical stance is a paper by Jorma Koivulehto (2007: passim), based on a similar approach to [P2] and [P3] (and Schalin 2008, 2012), which censures some research that had neglected the regularities of historical sound change and based conclusions on coincidental word-to-word look-alikes. See also 'nt 1' on p. 403 in [P2].

[34] Despite their relative phonological unreliability, in some cases toponyms have the edge over appellatives as fossils of language history. Naming bases of toponyms may sometimes be traced and compared, because their correlates are concrete unaltered named locations. This is the flip side of the statement in [P2] (p. 401), which points out that the naming basis for toponyms often falls into oblivion.

ASc sound change *-ht-* > *-tt-* (cf. normal later substitution Sw *Huktis* ← *Huhtinen* and *Vichtis* [Viktis] ← *Vihti*). Another nearby is *Abbor(r)fors*, which Saxén (ibid.: 11–16) saw as an adapted genetic descendant of **Ang(a)bor(a)fors*, indirectly attested in 1415 as the allegedly borrowed Finnish name *Ankapora* (cf. the case for an equally ancient but reverse direction of borrowing in Heikkilä 2014b: 309f). Unfor-tunately, in view of the general absence of a name layer of borrowings of that age in southern Finland, the seemingly valid sound historic arguments to date these three names have not convinced the scholarly community to the extent that it would be permissible to use these etymologies in support of each other ([P2]: 408; Granlund 1956: 80, 84ff) in a circular fashion. Hence, linguists cannot appropriate toponymic research for themselves. Phonological criteria cannot be used in isolation (see Saarikivi (2015: 105).[35]

3.4.4 Observations on contemporary studies

The state of research on the topics in [P2] and [P3] has not changed significantly since publication, with the possible exception of work by Heikkilä (2014a; 2014b). The earlier research history is discussed in the papers; in [P2] (pp. 401–402, 406–408) and with particular references to Hellberg (1987) also in [P3] (pp. 277–282). A work that should have been included as background reading in the bibliography is the dissertation by Kristel Zilmer (2005). It is very valuable for understanding the context of toponyms in the Baltic Sea area mentioned in Icelandic sagas and on rune stones. Another contribution to that end is Roslund (2017), which reaffirms the picture discussed in Ahola, Frog and Schalin (2014), namely that seafaring over Åland and Finland on the eastern route paused in the eleventh century.

A paper published by Lars Huldén (2012) at the beginning of the writing process could have been referred to. Huldén picks up the discussion on the name *Bálagarðssíða*, which is repeatedly mentioned in the Icelandic sagas (H. Pipping 1913; R. Pipping 1915). The name has been identified with the southern coast of Finland, or various parts of it, but Huldén (with reference to the substance of [P2] by referring to Schalin 2008, where the same topic is discussed), argues that the name may primarly be mythological rather than geographical.

A few more papers that were published concurrently with [P2] and [P3] in 2014 are highly relevant. First, Michiel de Vaan (2014) has examined the alternatives for the origin of Dutch *eiland* ‘island’, either as an inherited word or one borrowed from a Frisian source. His research question is the vocalism in the first part of the compound and he postulates and discusses numerous possible West Germanic reconstructions. These reconstructions could in theory be cognate with ancestors of compounds such as

[35] Saarikivi′s point is made in the context of reviewing the dissertation by Mikko K. Heikkilä (2014a). Heikkilä′s dissertation has also been censured by Kaisa Häkkinen (2015). As regards Heikkilä′s treatment of Scandinavian sound history, see criticism in SUBS 2.2.2 above (with NT 16) and SUBS 3.5.6 below.

Öland or *Åland*, widely discussed in my papers. Indeed, de Vaan also provides updated background for the vaguely formulated suggestion by Matts Dreijer (1979: 112–113) that Frisian sound laws or a Frisian borrowing could account for the fact that the name *Åland* lacks front umlaut.

Moreover, Mats Larsson and Staffan Fridell (2014) have discussed the origins of the name *Roden* 'Roslagen'. Their presentation offers a far superior background and bibliography to my short discussion of the name *Ruotsi* in [P2] (pp. 428–429). While the authors mainly elaborate on the etymology in terms of semantics, they accept the phonological explanation contained in Ekbo (1958), which entails a borrowing from a post-syncope *u*-stem m. nom. sg. **rōþz/*rōðz* into Finnic *Rõtsi*. This account was noted but doubted by me in [P2] (p. 428) due to "unparalleled difficulties with regard to morphological substitution practices". The qualification "unparalleled" meant that there are no parallels in Finnic for a sibilant reflex of the nominative ending /z/ (or /ʀ/) in a post-syncope borrowing.[36] Also there are no parallels for a reflex of that ending not preceded by a vowel. A similar problem of lacking parallels does, however, encumber my own suggestion in [P2] (p. 428). There I proposed that some intermediate stage between LPFc **-cc-* and EFi **-ϑϑ-* would have served as a substitute for the fricative **-þ-* in the pre-Viking Age ASc **rōþ(u)-*; such a substitution by gemination may be plausible in the case of a voiceless obstruent.

The two explanations differ on chronology. The substitution assumed by Ekbo is not possible to backdate beyond *u*-syncope, which in turn is hardly earlier than 700 CE.[37] Scandinavian sound history does not pose a problem for backdating the substitution with **-ϑϑ-*; in fact archaic substitutions of a Finnic *i*-stem for a Scandinavian *u*-stem seem attested at least twice ([P1]: 252–253).[38] As for Finnic sound history, the uncertainties are considerable. In a recent discussion Kallio (2017) casts doubt on the argument by Terho Itkonen (1981) for dating the development **-cc-* > **-ϑϑ-* before 700 CE. Yet he finds sufficient indications to consider the change pre-medieval. These considerations are not enough to support the substitution proposed in [P2], even if they do not rule it out either.

[36] Such parallels may occur in Sámi, even if it is doubtful whether they also date from the post-syncope period or result from Sámi metathesis (Theil 2012: 59–60).

[37] Larsson and Fridell (2014: 52–53) postulate after Ekbo (1958: 197 nt 2), with reference to Schulte (1998: 87 ff), a somewhat earlier transitional form **RoþəR*/**RoðəR*. According to Ekbo (ibid.) such an intermediate form with a weakened vowel may have served as a source for the Finnish word **rõtsi*". Here the assumption of an unparalleled sound substitution is encumbered with further problematic conditions. For the date of *u*-syncope see the chronology established in 'subs. 3.3' of [P5], displayed in FIGURE 1 above.

[38] The examples quoted are Fi *tauti* 'disease' < **tauti* ← **dauþ(u)-* m. > OSw *døþęr* 'death, deadly disease' and Fi *raitti* 'main village road, farmyard' < **raitti* ← **wrait(u)-* m. > OSw *vretęr* 'strip, parcel, farming field' ([P1]: 252–253).

I got access to Heikkilä′s (2014a) doctoral thesis (as stated on ‘p. 430’ in ‘nt 3’) at the time of proofreading [P2]. Heikkilä (2014a: 307), who has had access to a draft of [P2], has approved many of its etymologies, but disagreed on *Kymmene*. He interpreted the name as a frozen form of the feminine dative/genitive singular, appended by the enclitic *-*i(n)ne*/*-*i(n)na(r)* for the determined form. He sees the noun itself, *kym(in)*, as derived from the same root as the loan original assumed by Koivulehto (1987: 36), meaning ‘accessible, navigable’, but with the zero grade instead of the lengthened grade suggested by the latter, and with a feminine suffix < **kumjō* < PlGmc **k*^{w}*umjā*. Heikkilä makes a flawed point against Koivulehto on the basis of gender, because river names in OSw would have passed to feminine declension regardless of etymological gender, precisely as lake names would have passed to masculine declension (Schalin 2010: 30, 36 with references). Unfortunately, Heikkilä does not account for an attestation of a zero-grade *jō*-stem in any Indo-European language and neither does he argue for its reconstruction; this evasion renders the reconstruction *ad hoc*.[39] Also his claim against Koivulehto′s substitution rule is ill-founded. Therefore, the case for a PlGmc/PGmc loan original that could be an ancestor of the Swedish name remains utterly fragile. The many reasons to consider the Finnish name *Kymi* as a source for a borrowing into OESc *Kymmene* remain (Schalin 2012: 394).

Heikkilä′s explanation of the second part should still be taken into account. It must be conceded that if, upon borrowing into OESc, the Finnish name *Kymi* had been suffixed by the enclitic for determined forms (as also mentioned in Schalin 2012: 392), it could have been frozen as dative *+Kymi(n)ne* and/or the genitive *+Kymi(n)na(r)*. This explanation better accounts for the variation in the ultimate vowel, which also appears as <a>/<æ>.

The problem of how to account for the early attestations with geminate *-mm-*, as in *Kymmenæ* (1380) or *Kymmena* (1388), has not been addressed by Heikkilä (Schalin 2012: 390). Even if a lengthening *-VmV-* > *-VmmV-* is a regular late medieval development in dialects of most of today′s Sweden, these central dialects do not seem to have affected attestations of names in the vicinity of Swedish speech communities on the Finnish south coast. As for a parallel, there is no attestation of *+Kimmito* for *Kimito* ← EFi **Kemittu*. One could hardly assume a repair by quantitative metathesis either, that is, compensatory lengthening in the main stressed syllable in exchange for loss of unpronounceable length in the following syllable *KymmenV* < *+KymennV*, because the name is attested in 1442 and 1544 as *KymmennV* with gemination after both syllables, which undermines the precondition for such a repair.[40]

[39] The Gothic zero-grade parallels quoted in Heikkilä (2014a: 266) are indeed not *jō*-stems.

[40] The idea of quantitative metathesis (in a variant applying to vowel length) could provide a better solution than the one given in [P2] (pp. 414f) to the problem as to how attested OSw *Oris* (1451 cf. gen. sg. *Oorss* 1534 and gen. sg. *Oorsz* 1540) could relate to attested MFi

Heikkilä (2014b) has also published a relevant chapter in the volume on the Viking Age in Åland. It does touch upon some of the same etymologies but, more importantly, it makes use of front umlaut to date naming events. Therefore, I return to it in the context of front umlaut, in SUBS 3.5.6 below.

As for the OESc ethnonym **tafaistr* I now deem it reasonable that the name was given in the context of the sea route passing by the south coast rather than via local contacts of the more inhabited west coast. This question was left open in [P2] (p. 419). First, an adjective as a qualifier to the ethnonym **aistr* 'Estonian' only makes sense in the context of the south coast and the presence of the Tavastian tribe in the south is not in question. On the west coast the reference tribe to qualify would have been the **finnr* or **kvǣnr* or whatever name their ancestors carried. Second, the fact that the west coast was geographically closer to the attestation in Gästrikland is less important than the fact that the trade over *Aldeigjuborg* (Staraja Ladoga), which was significant in the early Viking Age, passed by the south coast.

3.4.5 Errata and corrigenda

An edit of a late amendment to 'Table 1' in [P2] had one row dropped from the table, namely the one defining the period from 750/800 to 1225/1250 CE. This represents the stage called 'Old East Scandinavian' in the paper, which is equivalent to the terms 'rundanska' and 'runsvenska' and corresponds to the period of 'Early Finnish'. For the complete periodisation relating to [P2] reference is made to TABLES 2 and 3 above.

The CC-BY licence for the image on page 410 is incorrectly rendered in endnote 5 as "CC-BY-3.0", via Wikimedia Commons, where it should be the near-equivalent licence "CC-BY-2.5" as recorded in endnote 14. On page 417 the name of the runestone is incorrectly rendered under 'Figure 2' as "G13", where it should be "Gs13" as it is in the text.

The Old Icelandic name purportedly referring to the Gulf of Finland, *Bálagarðr*, is inconsistently spelled in the text of [P2]. The vowel of the medial syllable is dropped once on page 422, *Bálgarðr*, while the name is unintentionally represented in the accusative on page 424, *Bálagarð*. The word *finnlendingar* is erroneously spelled *finlendingar* on page 422.

In [P3] the calculation of the rate of past shore displacement is correct but the formula accounted for in 'note 6' as applied to the location of *Lemböte* contains an error. As the shore displacement in the *Lumparn* area is estimated at 5.5 mm per annum a

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horinsar < ?MFi **Ori(h)insaar(i)* 'stallion island'. Without quantitative metathesis, this loan original would seem to predict a mid vowel +[ɔrs], while the attested Swedish with a long high vowel points to OESc **Ōrinsar*. Similarly, quantity metathesis could explain how MFi **Vanaa* (parallel form to standardised *Vanaja*, a lake and later parish in central Häme) came out as OSw **VānV* rendering Swedish *Vånå* (contrast Heikkilä 2014a: 219–224, who hypothesises that the long root vowel reflects an inherited Germanic lengthened ablaut grade).

decimal should not be added, as is done in ‘note 6’, but subtracted, since *Lemböte* is situated south of *Lumparn*. The figure 5.4 mm per annum instead of 5.6 mm per annum has however been correctly used to calculate the *terminus post quem* for the naming of *Lemland* “somewhere between AD 700 and AD 1050” as stated in the text on page 284. Thus the error is confined to the explanatory note. A reference to the discussion in R. Pipping (1929), missing in the text, would have been appropriate.

3.5 Front umlaut and related regressive metaphony

Among the regressive metaphonic vowel assimilations referred to here as front umlaut, rounding umlaut and (vocalic) breaking there are numerous very strange unexplained anomalies. Very few generalisations have no exceptions, and although each of these are explainable as regular in their own right, they seem logically detached from one another.

For example, front umlaut was exceptionless only when triggered by a glide *-*j*-. Most infamously, fronting failed to occur in cases where both the target syllable and the trigger syllable were equally light, as in PSc **framïðō* > *framda* ‘performed carried out’ (instead of expected +*fremda*). Yet as a secondary exception to the main exception, fronting did occur if the trigger was followed by *z, as in PSc f. nom. sg. **framîzō* > *fremra* ‘the anterior’. But even this rule is subject to a third-level inverse exception, namely if *-*z* was a hetero-morphemic ending for the nominative of masculine *i*-stems, as in PreSc m. nom. sg. **staði-z* > ON *staðr* ‘place’. In order to come to terms with such ill-fitting data, morphological generalisations have been invoked at convenience, instead of phonological rules.

Anomalies in rounding umlaut, albeit much less notorious, are no less awkward. For some reason a round trigger vowel appears to have been chiefly active for rounding umlaut only if the target vowel was low (typically *a* > *ǫ*). In words such as PSc f. nom. sg. **lîndu* > *lind* ‘linden’ or PSc m. nom. sg. **rêhtuz* > ON *réttr* ‘right, entitlement’ no traces of rounding umlaut are found. This statement is not, however, always valid if the trigger was a glide *-*w*-, as in m. acc. sg. **lîngwa* > ON *lyng* ‘heather’, but even this exception comes with subordinate inverse exceptions without *w*-umlaut in eastern Scandinavian, for example in a word like PreSc **nikw-az*/*-ez*- > OSw *nekẹr* ‘water-monster’.

In [P4] and [P5] it is shown that the most recurrent context for exceptions in the vocabulary, namely when a trigger in a light syllable had followed a target in a main stressed light syllable (CV.CV.-), may be economically explained by assuming that trigger vowels in this position belonged to the same vowel system as vowels under main stress and not to the system that was contained by fully reduced syllables. In order to explain umlauts from long trigger vowels, a system is proposed where pitch/loudness prominence was assigned independently of syllable quantity based on a mora count from right to left (as briefly introduced in SUBS 2.3.1 above). This prominence

system can also account for mutations in trigger vowels that change prosodic position after early syncope (e.g. **katïlaz* > **katîlz*).

The explanation also entails the reconstruction of one chain shift in the Proto-Scandinavian system for short oral vowels, namely dorsalisation of non-round PreSc **i* > PSc **ï* (perhaps realised approximately as central [ɨ]) accompanied by conditional raising of a 'laminal' (i.e. markedly fronted) PreSc **e* > PSc **î*. The distinction between the proto-vowels **ï* and **î* is only recoverable by reverse engineering it from their phonological activity, including their differing 'alterability', that is, their propensity to evolve into different descendants by means of rounding umlaut and breaking.

Table 6. Occurrence and absence of different umlauts

	Short trigger after heavy syllable	**Short trigger after light syllable**
***i*-umlaut**	**gas.tî* > *gest* 'guest' (acc.) **dō.mî.ðō* > OSw *dœ̄mda* 'I deemed' **lan.g-î.þu* > *lengd* 'length'	**sta.ðï* > *stað-* 'place' (acc.) **fra.mï.ðō* > *framda* 'I carried out' **fra.m-î.þu* > *fremd* 'furtherance'
***iʀ*- (or *iz*-) umlaut**	**gas.tî-z** > *gestr* 'guest' (nom.) **mū.s-i͡z* > *myss* 'mice' (pl.)	**sta.ðï-z* > *staðr* 'place' (nom.) **hnu.t-i͡z* > OSw *nytẹr* 'nuts' (pl.)
Breaking	**sel.ƀaz* > OSw *siælfẹr* 'self'	**fe.ta-* > *fet-* (OSw *fiæt-*) 'step'
***u/w*-umlaut**	**feƀ.ru* > OSw *fiæþẹr* 'feather'	**me.ðu-* > OSw *miøþ-* 'mead'

The overall analysis is based on inferring contrast in the umlaut-era vowel systems from the diverse traces of rounding umlaut, front umlaut and vocalic breaking in the data. Anomalies in the data have not been set aside as stumbling blocks to be assigned separate makeshift explanations only after the formulation of the main rules. Instead these anomalies have been approached as touchstones for economical explanation; they have been explored as traces of phonological activity and thus approached as resources for phonological problem solving. The phonological activity is taken as the starting point for the reasoning while the aim of it is to refine the description of the vowel system.

This approach has made it possible to explain more attested data phonologically and thereby to reduce the need to invoke morphological generalisations. It brings together the explanation of diverse umlaut phenomena with a single cohesive set of phonological explanations and thereby restores the explanatory economy which has been lacking in all accounts of umlaut.

3.5.1 Abstract of paper [P4], its aims, publication forum and main findings

In [P4], "Scandinavian Front Umlaut Revisited and Revised", the research situation concerning *i*-umlaut is scrutinised and the defectiveness of previous attempts to explain the distribution of fronting in the vocabulary is illustrated, based on internal reconstruction. As a starting point, the nearly canonical problem configuration influenced by Kock′s (1911–1916) classic three-period theory is critically evaluated. Subsequently the data is reconfigured to include some neglected anomalies, which paves the way for a phonological explanation for why, against all expectation, front umlaut occurs in some light-stem paradigms.

The principal aim of the paper is to present and argue the key elements for a novel solution that can account for the distribution of front umlaut in the Scandinavian lexicon. Accordingly, it seeks to explain under what conditions this primary phonological stage of sound change originally occurred, and by implication its relation to later analogical change and morphological generalisations. A secondary aim is to demonstrate that this solution is more powerful and economical than some of the main hypotheses advanced in the last two decades, especially in explaining the most notorious classic complications.

With a view to reconstruct past systems of contrast particular attention is paid to forms that defy the generally accepted rules. These include the PSc feminine abstracts in **-iþu* and the unexpected outcomes of '*iʀ*-umlaut' (see NT 25 in SUBS 2.3.2 above). Such ostensible anomalies are used as resources for reverse engineering and are refined into an acid test against which existing hypotheses fail, because they do not take into account the contrasts between dorsal and laminal palatal trigger vowels. A set of subminimal pairs are compared and invoked based on the light stem **fra.m-*. This etymon is chosen because a rich set of derivatives have been regularly formed from it and, owing to their common origin, they constitute illustrative subminimal pairs against which the acid test may be set up. Assuming that the derivatives are representative for their classes, they are also probative.

A novel proposal is developed, based on the assumption that, well into the umlaut period, contrast was upheld between descendants of PlGmc */e/ and */i/ respectively, even upon the Pre-Scandinavian raising of **e*. This preserved contrast applied both in main stressed syllables and in some light second syllables which harboured triggers for front umlaut. These syllables are assumed to have carried relative prominence or, in other words, to have been relatively less reduced. A chain shift affected the descendants of the two mentioned proto-vowels, respectively. Generally, where the descendants of PlGmc */e/ were raised they had evolved into a markedly fronted (or 'laminalised') coronal vowel **î*. With few exceptions, descendants of PlGmc */i/ occurring in prominent syllables evolved into the dorsal vowel **ï*, including when positioned in a non-initial syllable as a potential umlaut trigger. Secondary evidence for this chain shift is the alterability of the two vowels in root-initial syllables when targeted by rounding umlaut and breaking. In mainstream Scandinavian, descendants

of PlGmc */e/ could undergo rounding and breaking, as in *þjukk* ‘thick’, while descendants of PlGmc */i/ normally did not undergo rounding and never breaking, exemplified by *siðr* < **sïðuz* ‘custom’ (see TABLE 9 in SUBS 3.5.3).

The two vowels **î* and **ï*, active and inert as triggers for front umlaut respectively, could both have occurred in light second syllables within a main stressed bisyllabic foot. In this position descendants of PlGmc */e/ triggered a front umlaut unconditionally, as exemplified by PreSc **frameþō* > **fra.mî.þu* > *fremd* ‘furtherance, honour’, whereas the descendant of PlGmc */i/, in places where it had developed undisturbed, emerged as **ï*, and thus normally remained inert as a trigger for front umlaut, as exemplified by PreSc **framiðð̄* > **fra.mï.ðoo* > *framda* ‘I carried out’. By explaining the distribution of these two vowels in the lexicon, most of the notoriously intricate cruxes of *i*-umlaut may be neatly accounted for.

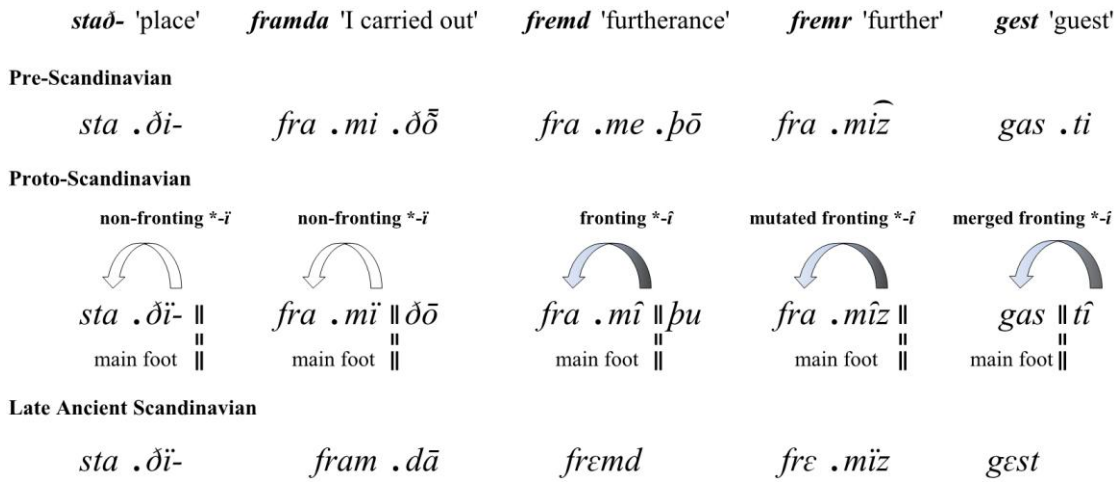

Figure 2. Contrastive coronality of triggers in non-prominent and prominent syllables.

In a limited set of contexts adjacent to coronal consonants, the descendant of PlGmc */i/ developed by phonetically natural conditioning into the coronal **î* and, in those cases, actively triggered front umlaut. The most emblematic context where this regularly occurred was the tauto-morphemic PreSc sequence *-*i͡z*-, which did not develop into +-ïz- but *-*îz*-, as exemplified by PreSc f. nom. sg. **fram-i͡z-ðð̄* > **fra.mî‖zoo* > *fremra* ‘the anterior’.

In non-prominent syllables the descendants of the two vowels had merged in Pre-Scandinavian times in the context of an impoverished vowel system and had (whenever not becoming nasalised in TSc) resulted in a coronal *-*î*. Thus, these oral descendants, which were located in a fully weakened position outside the main foot, regularly triggered front umlaut regardless of etymological origin, as exemplified by PreSc **dōm-i-ðð̄* > **doo‖mî.ðoo* > *dœmda* and PreSc **gasti* > **gas‖tî* > ASc *gɛst* > OSw *gæst* ‘guest’ ~ON *gest*.

Building on these immediate main findings, an analysis is developed that explains the distribution of front umlaut triggered by long vowels. According to it, the promi-

nence of syllables outside the main stressed foot is derived by a count of moras from right to left. This prominence assignment algorithm may correctly predict not only the fronting features of umlaut triggers but also the progression of syncope in conformity with the respective attested outcomes.

In a final section some existing and competing explanations based on 'umlaut reversion' are shown to be inadequate. These assume that deletion of triggers after heavy syllables occurred earlier than deletion after light syllables (see SUBS 2.3.1 above). This interval would allegedly allow for the corresponding fronting in heavy syllables to have become contrastive before fronting in light syllables, which conversely was not contrastive, underwent umlaut reversion. Based on two relatively recent and elaborate examples (Schulte 1998; Iverson & Salmons 2004; 2012) these explanations are shown to be critically deficient.

The paper was anonymously peer-reviewed and approved for publication in the journal *Arkiv för nordisk filologi* ('ANF') 132 (2017). ANF is a peer-reviewed journal which publishes historically-oriented linguistic and philological research about the Nordic languages and early Nordic literature through the University of Lund.

3.5.2 Contrastive Hierarchy Theory

In [P5] the Contrastive Hierarchy Theory (Dresher 2008, 2009, 2015a, 2015b, 2016) is selected and applied in order to improve description of preliterary Scandinavian umlaut. It is readily admitted that the choice may partly predetermine the solution. No attempt is made to prove the theory, since much better described languages are available for that purpose; the CHT is continuously being scrutinised for its empirical merits (e.g. Nevins 2015; Hall & Hall 2016). The theory is chosen here to provide an explicit, transparent and rigid framework for testing the potential of some intuitively promising key research questions about the develpment of preliterary Scandinavian (see SUBS 1.3 above). Do abstract underlying contrastive feature specifications determine regressive feature spreading? Can 'underspecified' phonemes account for the inertia and activity observable as absence and occurrence of umlauts in the data?

According to the CHT contrastive features for phonemes are determined for any specific language by establishing a binary feature hierarchy and assigning bipolar contrastive features by applying the Successive Division Algorithm until every phoneme has been distinguished (Dresher 2008: 21f, 2009: 14–17). In line with the CHT and its 'Contrastivist Hypothesis' only features that are properly contrastive are assumed to generate phonological activity. Hence, phonological activity is assumed to confirm a contrast in the segment from which it originates.[41] Moreover, a well-formed hierarchy

[41] The 'contrastivist hypothesis', originally formulated in Hall (2007: 20f), states: "The phonological component of a language L operates only on those features which are necessary to distinguish the phonemes of L from one another."

need not be perfectly symmetrical, which means that one phoneme may be remarkably underspecified in relation to another, even if the two are phonetically adjacent.

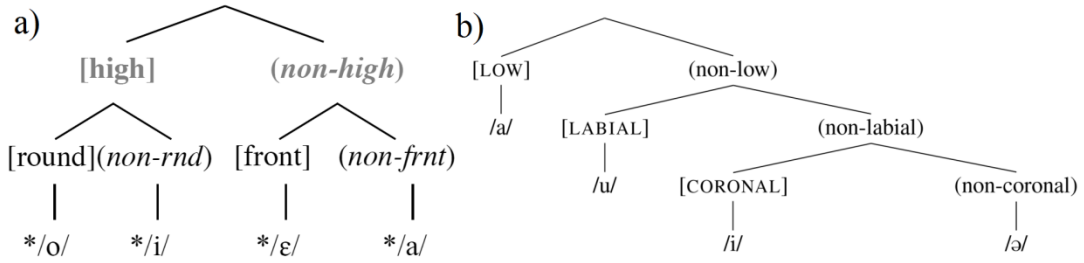

Figure 3. CFHs for a) western and eastern Algonquian and b) Proto-Eskimo.

To illustrate the theory, FIGURE 3 shows contrastive feature hierarchies (CFHs) for two analyses of four-vowel systems, one for western and eastern Algonquian (see Dresher 2015b: 165–171 in an account of Oxford 2015: 336–350) and another for Proto-Eskimo (Compton & Dresher: 2011: 221). In the CFH for Proto-Eskimo in FIGURE 3 (b) the phonemes */ə/ and */a/, while phonetically adjacent, belong to different classes with regard to a contrast [low], which is of high ordering, and while */ə/ is understood to be specified for [–labial] and [–coronal], */a/ (being an underspecified vowel) is unspecified for both.

In the western and eastern Algonquian languages, represented by the CFH in FIGURE 3 (a), the specifications of */ɛ/ and */i/ differed not only for [high] but also for [round] and [front]. The latter may be deduced by means of the Contrastivist Hypothesis from the empirical fact that, counterintuitively, palatalisation of consonants was not exercised by */i/, but by */ɛ/ only. Conversely, in Proto-Eskimo as illustrated by FIGURE 3 (b) only a so called "strong *i*" palatalised consonants because it was the only vowel specified for [coronal].

Thus, in line with the CHT, the most important source of information about the contrastive features of a particular phoneme is not always its phonetic surface realisation *per se*. The acoustics of phonemes in its vicinity may be equally important since variation in their articulation reflects the activity targeting them, which in turn reveals the contrastive features of the source. This holds true whether stated when a language learner is acquiring the language or from the perspec-tive of a scholar in pursuit of a valid analysis.

It is further worth illustrating use of the theory with a few examples from Scandinavian sound history. Jørgen Rischel (2009 [1966]) used a hierarchical feature tree to illustrate how, after the Scandinavian runic reform, the three runes for vowels of the Younger Futhark mapped onto nine vowel phonemes.

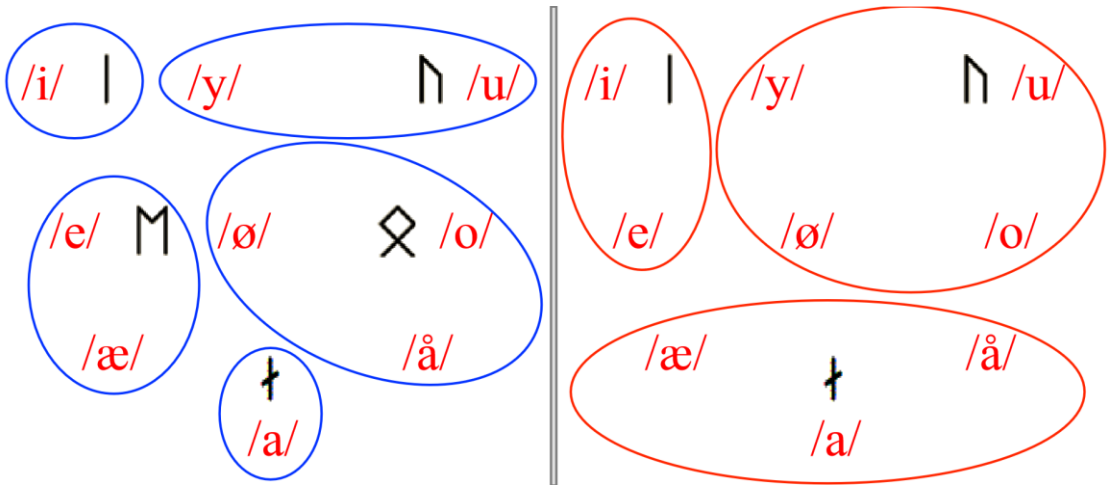

Figure 4. Counterfactual (left) versus attested (right) mapping of the ASc vowels after runic reform, reproduced from illustrations by Dresher (2016: 15–17).

In FIGURE 4 the left-hand image shows how nine ASc post-umlaut oral vowel phonemes could plausibly have been represented in runic orthography, as imagined by Rischel (2009 [1966]: 260–266), if the five existing runes had been preserved and phonetic proximity had been the leading organising principle. This spelling would however have been illogical from a morpho-phonemic point of view, because it would not have reflected how vowels alternated (for example /æ/ and /å/ with /a/) in many paradigms following umlaut. Moreover, fully reduced vowels were organised in a three-vowel system. Importantly for the CHT, Rischel stated that the factual mapping of three runes on nine vowels shown in the right-hand image above conformed to a condition that the contrasts [low] and [round] were of higher rank than [close] or [back], as illustrated in the full CFH in FIGURE 5.

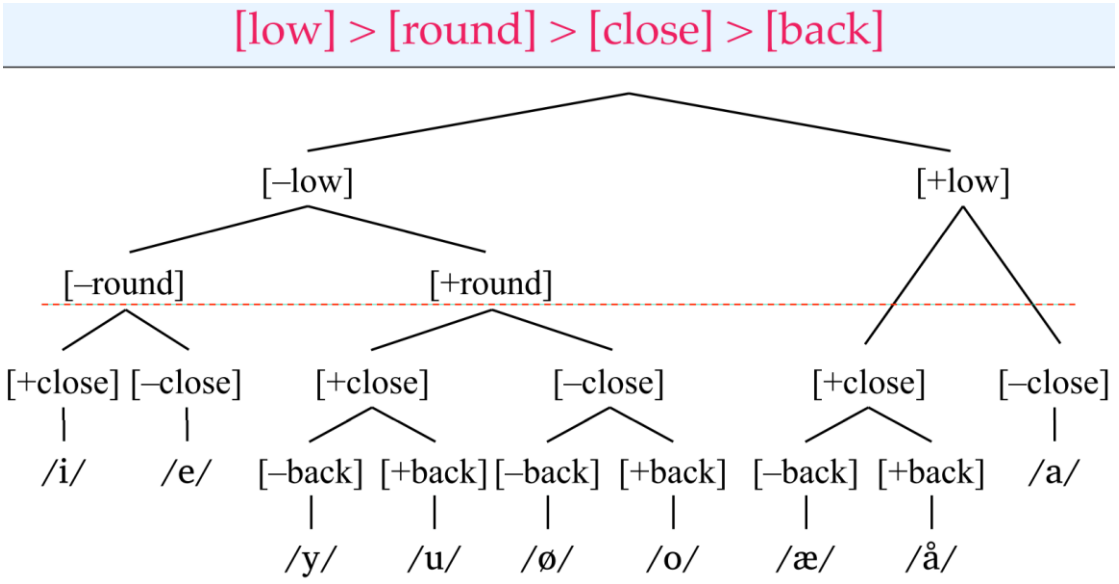

Figure 5. Contrastive feature hierarchy of ASc vowels after runic reform, reproduced from illustration by Dresher (2016: 24) slightly modifying Rischel (2009 [1966]: 265).

In FIGURE 5 the dotted line represents the level at which only the two "crassest oppositions" were represented, organising the vowels in three classes, which also corresponded to the three runes employed.[42]

Without knowledge about phonological activity it is not easily determined whether 'palatal' vowels (*i* and *ī̄*) and 'non-palatal' vowels (*u* and *ō̄*) carry specifications for lip-rounding [+/–round] or [+/–labial] or for tongue posture [+/–back] or [–/+coronal]. Typologically, round vowels tend to enhance the salience of their rounding by means of phonetic backing while, similarly, back vowels enhance the salience of their backing by phonetic rounding. In a vowel system with rounded front vowels like /y/ and /ø/ where no [+back], [–round] vowels like +/ɯ/ or +/ɤ/ exist, such as in French, German or in OSc, the ordering of [back] and [round] is decisive for whether either non-palatal vowels (*u* and *o*) are underspecified with regard to rounding or whether unrounded palatal vowels (*i* and *e*) are underspecified vis-à-vis fronting. The latter condition is evident for example in Finnish, where *i* and *e* (albeit phonetically fronted) are indifferent (unlike *y* and *ö*) to front/back vowel harmony.

Table 7. Alternative Old Scandinavian feature hierarchies, as specified according to Hreinn Benediktsson (2002b [1959]: 54)

[low] > [high] > [round] > [back]

	i	**y**	**u**	**e**	**ø**	**o**	**ę**	**a**	**ǫ**
compact (=low)	–	–	–	–	–	–	+	+	+
diffuse (=high)	+	+	+	–	–	–			
flat (=round)	–	+	+	–	+	+	–	–	+
grave (=back)		–	+		–	+	–	+	

[low] > [high] > [back] > [round]

	i	**y**	**u**	**e**	**ø**	**o**	**ę**	**a**	**ǫ**
compact (=low)	–	–	–	–	–	–	+	+	+
diffuse (=high)	+	+	+	–	–	–			
grave (=back)	–	–	+	–	–	+	–	+	+
flat (=round)	–	+		–	+			–	+

As early as 1959, Hreinn Benediktsson (2002b [1959]) considered the hierarchical ordering of these features and realised its implication for underspecification, as easily recognised from TABLE 7, which is reproduced (with one typal corrected and gridlines differentiated) from p. 54 of his article. A faithful illustration of his analysis by a

[42] Note that Rischel′s CFH is not identical to the 11-vowel system reconstructed for EASc in 'Figure 14' of [P5] (p. 242), where [close] is equalled by both [high] and [ATR] and the latter ranked higher. There too, however, [low] and [round] are ranked above [high] and [back].

hierarchical branching tree for contrastive features is given in FIGURE 6. Viewing the changes in OSc vowels through the lenses of the CHT, it seems difficult to avoid the conclusion that the first alternative ranking proposed by Hreinn, illustrated in the upper half of TABLE 7 and mirrored in the left-hand CFH in FIGURE 6, should be assigned to Old Icelandic, while his other alternative is a valid analysis for OSw (TABLE 7 lower half = right-hand CFH in FIGURE 6). In Old Icelandic rounded vowels tended to merge with each other, for example /ǫ/ merged with /ø/ and became /ö/. Such phoneme mergers, especially where they are spontaneous or unconditioned, suggest that the lost contrast (in this case [grave] or [back]) was dispensable and thus of lower ordering than the preserved one, in this case [round].

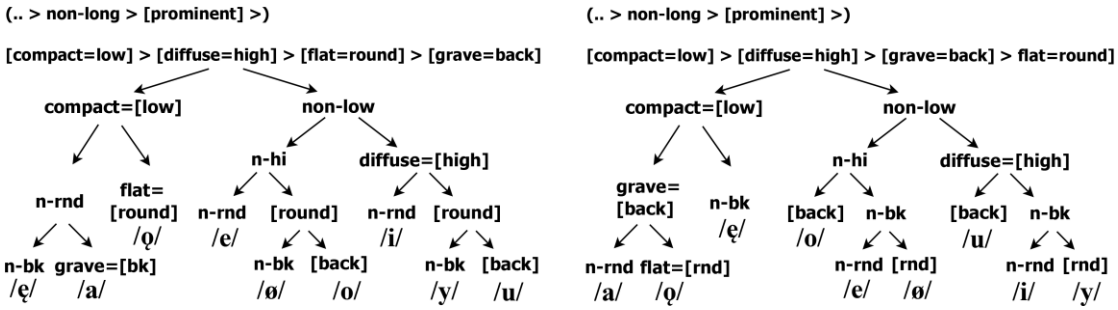

Figure 6. Alternative Old Scandinavian feature hierarchies, shown in binary trees by data from Hreinn Benediktsson (2002b [1959]: 54).

All this may be seen in opposition to the eastern Scandinavian evidence. In OSw labialisation of /i/ > /y/ as in OSw *mykel* ~ ON *mikill* easily took place in pertinent labial consonantal environments (Wessén 1965: §34; Widmark 1991: 141) and was much more likely to occur if [round] was ordered at the bottom of the CFH. More importantly still, in the common OESc ancestor of OSw and ODa, rounded /ǫ/ underwent phoneme merger with unrounded */a/. To the extent that instances of /ǫ/ had not mutated into another rounded vowel, as in OSw *ørn* 'eagle' < LASc **ǫrn-* < EASc **arnu-* < PreSc **arnu-* (cf. ON *ǫrn*), the residual cases, which constitute a vast majority, seem to have merged spontaneously and unconditionally (Hesselman 1945: 16ff.; Widmark 2010: 72). Phoneme merger also entailed derounding while the original trigger /u/ was still present, as exemplified by OSw *stapul* 'pillar, column, stack, pile' < LASc **stǫpulz* (cf. ON *stǫpull*). On condition that metaphony had not yet faded, this may suggest that OESc /u/ was no longer specified for [round] but was now a [+back] vowel only post-phonologically enhanced by {{+round}}.

The eastern promotion of [back] over [round] was an innovation expansive during the early Middle Ages, because when palatalisation (and subsequent affrication) of velar obstruents set in, conditioned on a following front vowel, unrounded vowels like *i, e* and *æ* were equally active for palatalisation as the round vowels *y* and *ø*. This is exemplified by words like OSw *g^{i}øra* 'to do', *k^{i}ȳla* 'to cool', *g^{i}ærþe* 'fence, paling', *k^{i}ī̆fwa* 'quarrel' and demonstrates beyond doubt that (unlike *i* and *e* in Finnish) they

also belonged to the same class of front vowels. The demotion of [round] eventually also occurred in Iceland; this is evident from the later development by which rounded front vowels merged with their unrounded neighbours (*y/ý* → *i/í*, *œ* (~> [ø:]) → *æ*, *ey* → [ei]) rather than with their backed (rounded) ones.

According to Contrastivist Hypothesis, as explained already above, triggers could only be active transmitters for features that were properly contrastive. Further, in [P5] (subs. 3.2) an 'Inalterability of Proper Feature Constraint' ('IPFC') was formulated, entailing that features were spread to target vowels as a function of feature filling rather than feature changing (cf. Bale et al. 2014). Absence of umlaut may thus depend either on a trigger that was inert due to underspecification or on a target that was inalterable due to coinciding specification (see Table 4 in [P5]). The feature-spreading rules are illustrated in TABLE 8 by examples of words that conform to regular sound laws.

Table 8. Trigger-target correlations illustrating contrastive rounding

f. acc. sg. 'linden'	*lind*	< **lindu* < PreSc **lendō*
m. acc. sg. 'heather'	*lyng*	< **lingwa* < PreSc **leng^{w}a*
f. acc. sg. 'figure, image'	*mynd*	< **mundi* < PreSc **mundi*
m. nom. pl. 'shoulders'	*bægir*	< **bōgī̄z* < PreSc **bōgewez*

The difference in the outcome of rounding umlaut between the two first cases, which have etymologically perfectly equal targets, must be attributed to the differing contrastive rounding of their triggers. Rounding failed to occur in **lindu* because the trigger *-u*, unlike *-w-* in **lingwa*, was inert for rounding umlaut and unspecified for [round] during the early umlaut era. However, in **mundi-* > *mynd* and **bōgī̄r* > *bægir*, besides the fact that the triggers were active for fronting and thus specified for tongue posture, the front umlauts indicate that the target vowels in their first syllables were (or became) [+round] by the umlaut era, because logically rounding occurs here as a precondition for the front umlaut, rather than becoming its consequence. It is not easily conceivable that a mere fronting of a vowel proviously only specified for [+back] would engender a new feature [+round] from scratch. Thus had rounding been a phonetic enhancement in a [+back] +/u/ or +/ō/, then the fronting should not have resulted in rounded umlaut vowels; rather the rounding of the vowels should automatically have relapsed, resulting in +/i/ and +/ē/ respectively (Antonsen 1972: 132).[43]

[43] For a clear description of the problem see Dresher (2015a: 113–115), who proposes for Old English that rounding passed from distinctive to contrastive concurrently with front mutation (ibid.: 130ff). Depite the application of the same theory the solution is clearly different.

Hence, adhering to the principle of feature filling leads to the conclusion that the system of phonological contrast frequently differed in triggering and target syllables: triggers often did not contrast for lip-rounding while target vowels often did. Any attempt to accomodate these differences in the same binary contrastive feature hierarchy will surely fail. The long vowels occurring both in positions as targets and triggers in the example **bōgī̄r* > *bœgir* 'shoulders' show that by this logic long vowels belonged to more than one feature hierarchy, too. The notion that there may be separate domains for evaluating contrasts has, of course, precedents. For example, Carrie Dyck argues that desinential vowels in Romance have their own feature hierarchies (Dresher 2009: 190–194).[44]

A careful trigger-target analysis along these lines makes it possible to efficiently avoid resorting to *ad hoc* exceptions that would typically invoke a blocking of the mechanism of the feature spreading or imply its discontinuing in an 'on-off-on' sequence. This may finally provide a remedy for the notorious flaws of Kock′s discontinuous three-period theory.

3.5.3 Abstract of paper [P5], its aims, publication forum and main findings

The overall aim in [P5], "Scandinavian umlaut and contrastive feature hierarchies", is to pursue an adequate diachronic phonological analysis of preliterary Scandinavian umlaut and breaking. Besides the raising of *e* > *i* and the lowering of *u* > *o*, other processes of regressive metaphonic change which are subject to closer scrutiny in [P5] include breaking of *e* > *jV*, front umlaut (in particular, the *i/j*-umlaut and the *iʁ*-umlaut) and rounding umlaut (the *w*-umlaut and the *u*-umlaut). With the application of the CHT, the contrastive features of preliterary Scandinavian vowels are inferred from the interaction between targets and triggers for such regressive metaphony, which is taken to be regular and exceptionless. This leads to the assessment that front umlaut, rounding umlaut and (vocalic) breaking may be described by a single coherent analysis of initially metaphonic regressive feature filling. This challenges more traditional accounts, where the characteristics of the vowel system are taken more or less at face value and the umlauts are explained with numerous exceptions to the main rules that the tacitly envisioned vowel system predicts.

[P5] offers a logically cohesive set of explanations for cases where alleged anomalies occur in the distribution of vocalic breaking, front umlaut and rounding umlaut in

[44] The analysis generates a fair number of contrastive features, which are used in different sub-hierarchies. An example of where this leads is 'Figure 3' in [P5] (p. 182) where [high] is contrastive for [+coronal] vowels and [low] is contrastive for [–coronal] vowels. The fact that the features must be treated as different is evident from their activity and in how they are ordered for long prominent vowels in 'Figure 6' ([P5]: 185). According to the CHT, phonological activity is a reliable indicator for detecting features, which takes precedence over a preference for an analysis economising their number.

the Old Scandinavian vocabulary, whenever a short trigger vowel in a light second syllable had followed another light main stressed target syllable (CV.CV.). Here the triggering syllable did not carry the three-vowel system (*a*-*i*-*u*) typical for short oral vowels in fully reduced syllables (in [P5] denoted *ʌ*-*î*-*ʊ*), but instead the same vowel system as main stressed syllables. The solution entails that all triggers in this prosodic position generated phonological activity different from triggers belonging to the three-vowel system. Only the hierarchy sustained by relatively prominent (or less reduced) syllables sustained contrast for rounding, and therefore triggered an early *u*-umlaut, which in OESc was better preserved than late *u*-umlaut. This analysis is also a very good fit for the attested data, which displays frequent absence of *i*-umlaut in light syllables and the absence of West Scandinavian *a*-breaking in light syllables (see TABLE 6 in the introduction to this section). In FIGURE 7 the the same two PSc CFHs are illustrated in hierarchical branching trees as visualised differently in 'Figure 3' of [P5], with the vowel space flattened in two dimensions. Compare also with the western PPSc feature hierarchy of 'Figur 3' in the Swedish resumé above, depicting the situation after the contrast shift promoting [low] over [coronal].

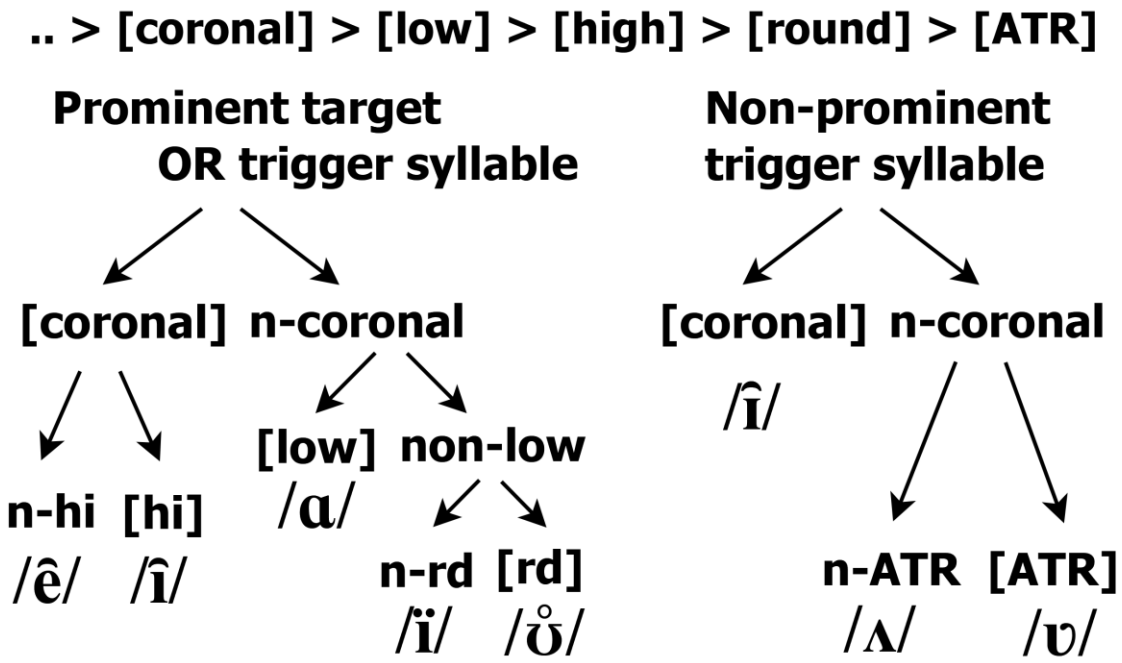

Figure 7. PSc (=eastern PPSc) systems for short oral vowels of differing prominence.

An inverted breve above a palatal vowel such as *ê*, *î* or *î* denotes a [+coronal] feature (for laminal articulation), as opposed to a dorsal one, which goes unmarked. The symbols *ï*, *o̊*, *ʊ* and *ʌ* denote dorsal vowels unspecified for [high], *ʊ* with advanced tongue root [ATR] and *ʌ* with retracted [–ATR]. A ring above *o̊* denotes [+round] specification, while a diaeresis above a palatal vowel, such as *ï*, denotes a [–round] feature.

Different Post-Proto-Scandinavian CFHs are thus reconstructed for distinct prosodic positions. The solution is not really *ad hoc* since a single general assumption without a patchwork of many auxiliary assumptions covers several diverse puzzles and their solutions therefore provide independent verification for each other.

Further independent verification is offered by the phonological propensity or 'alterability' that the vowels exhibit as targets for umlaut and breaking. The existence of a feature for tongue blade advancement that distinguished **î* from **ï*, which is seen from their activity as trigger vowels, is also consistent with their activity as targets. The presence of that contrast in main stressed syllables is revealed by the alterability to breaking and rounding in descendants of PlGmc */i/ and */e/, also where descendants of PlGmc */e/ were raised to **î*. In mainstream Scandinavian, descendants of PlGmc */e/ could undergo rounding and breaking, as in *þjukk* 'thick', while descendants of PlGmc */i/ only became rounded in the west, as in *nykr* ~ OSw *nekẹr* 'water-monster', but never underwent breaking.

Table 9. Difference in alterability of coronal and dorsal target vowels

Fully specified dorsal target vowel		
f. nom./acc. sg. 'new moon'	*nið-*	< **nïðǒ* < PreSc **nið(w)ō*
m. nom./acc. sg. 'custom'	*sið-*	< **sïðǒ-* < PreSc **siðu-*
Underspecified coronal target vowel		
adj. 'thick'	*þjokk-/þykk-* < *þjukk-*	< **þêk(k)w-* < PreSc **þek(w)u-*
'to sing'	OSw *siunga*	< **sîngw-* < PreSc **seng^{w}an-*

In [P5] the breaking and rounding in OSw *siunga* 'to sing' and *sliunga* 'slingshot' is thoroughly argued to be from the early umlaut period. Yet both were still later than raising *e* > *î*, as shown by the Finnish loanword *linko* 'slingshot' < LPFc **linko* ← **slîngwōn* descending from PlGmc **sleng^{w}ōn-*. Thus, at the time of borrowing, the contrast between PSc **î* and **ï* was not one of height.

In cases where rounding umlaut combines with breaking, an analysis is established in [P5] based on chronology and on the distinction between primary *jo*-breaking (and *ju*-breaking) on the one hand and *ja*-breaking on the other. A trigger that became contrastive for [round] too late to cause rounding umlaut in *lind* < **lîndv* or in m. nom. sg. **rêhtuz* > ON *réttr* 'right, entitlement' was first only a backing trigger, as in **fêþrv*; thus, rather than causing *jo*-breaking it generally initiated *ja*-breaking, only to become active for rounding umlaut later in ASc **fjaþrǒ*. On the other hand, a trigger that was already contrastive for [+round] at the time of back umlaut transmitted rounding as early as in *lyng* (~ OSw *liung*) < **lîngwʌ* and caused a non-high target to head for *jo*-breaking instead of *ja*-breaking.

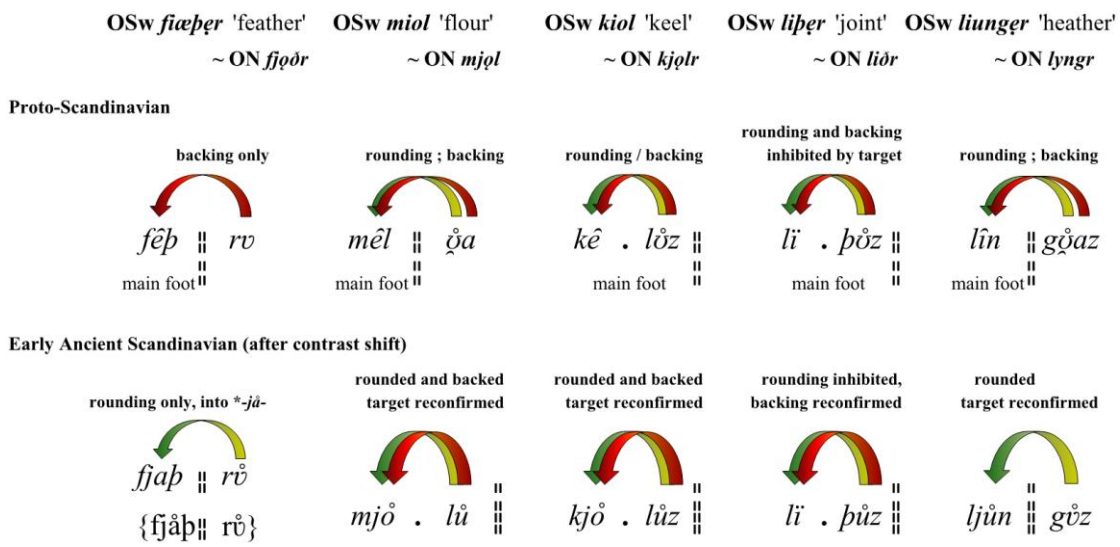

Figure 8. Alterability to breaking and rounding umlaut combined.

The younger rounding umlaut conforms to the "breaking-umlaut" theory while the older one is akin to the "epenthesis" theory (see [P5]: subs. 4.2). A survey of the rounding triggers allows us to establish that a syllabic trigger *-o̯* active for rounding this early was regularly positioned within the main foot. This analysis conforms to distinctions preserved in OSw, where the rounded target vowel in *kiol* and *miolk* 'milk' < **mêlǒk* is equal to that in the *wa*-stems *miol* or *smior* 'butter' < **smêrwʌ* rather than the unrounded one in the heavy *ō/u*-stems *fiæþęr* or *iæstęr* 'yeast' < **jêstvz*. Hence the trigger in **kêlǒz* 'keel' was specified for [round] early, just like the target in **mǒndi* 'figure, image' and thus belonged to the same CFH, a hierarchy applying to (relatively) prominent syllables (see the left-hand CFH in FIGURE 7).

The progression of umlaut during Transitional Scandinavian is also examined in [P5] (pp. 197, 205f) by means of three more loanword items in Finnic which clearly originate from that era, namely: **olut* 'beer, ale', **rohkeda* 'diligent, brave, abundant' and **kari* 'skerry'. The first two loans show early rounding umlaut and the latter loanword indicates that front umlaut in *ja*-stems still requires a contrast between different triggers after *a*-syncope, because the fronting was not yet salient in the target.

Paper [P5] is not an easy read. The hypotheses presented essentially amount to a complete overhaul or remodelling of the vowel evolution and its causalities. The umlauts are analysed as a whole. Phonemes are not seen as units in their own right but as manifestations of bundles of contrastive features. The development of features in the system is assumed to affect the vowels by a cohesive logic. Each insight is therefore intertwined with others (e.g. systemic changes in phonological contrast must correspond to changes in respective vowels and vice versa); as one referee put it, everything depends on everything.

These logical interdependencies, together with the postulation of exceptionless sound change and the stringency of other initial theoretical assumptions, made the

challenge for the subjective creative process akin to a sudoku or a cryptogram. If one thesis or initial assumption was changed, the implications often materialised as any number of falsifiable predictions, which could have a knock-on effect on other theses in the model. Changing the hierarchical order of features mostly had that effect (see NT 55 below). The fact that such a process of iterative falsification and verification produced one solution, rather than zero or a great number of solutions, is encouraging. Morover, a limited number of quite general initial assumptions, which did not conflict with truly attested fact, engendered solutions for a more numerous and disconnected set of particular problems in Scandinavian vowel history. This strengthens the case for the solution against any allegations that it might be *ad hoc*.

The following well-known touchstones may be explained by the overall solution (references are by default to [P5] with inverted commas omitted; other references are marked in full):

- The pan-Nordic absence of *u*-umlaut when targeting short and long **i* (subs. 4.1 & 4.3, cf. Rischel 2008: 222);
- The distribution of *u*- and *w*-umlaut in target syllables that underwent breaking simultaneously (subs. 4.1, 4.2, 4.3 & 6.6, cf. Hreinn B. 1963);
- The West Scandinavian absence of *a*-breaking but not *u*- or *ō*-breaking in short target syllables (subs. 4.4.2, cf. Hreinn B. 1982: 41–55);
- The East Scandinavian absence of *w*-umlaut for a palatal vowel which descends from PlGmc */i/, as in Swedish acc./dat. pl. OSw *iþ̣r* ‘you’ cf. ON *yðr* and *nekẹr* ‘water-monster’ cf. ON *nykr* (subs. 4.5);
- The absence of *i*-umlaut in some but not all short target syllables, including the puzzle of *iʀ*-umlaut and the alternation in ON sg. *ketill* ‘kettle’/pl. *katlar* (Section 5, cf. [P4]);
- Widely dispersed (though not Old Icelandic) breaking, as in Swedish *skjorta* ‘shirt’, of fronted *-u-* between preceding *g-*/*k-* and following *-r-* (subs. 6.2.4, cf. Wessén 1968 [1941]: §33);
- Closely associated with the latter point, the alternation between broken and unbroken vowels in the paradigm Swedish *göra*/*gör*/*gjorde* (subs. 6.2.4, cf. Widmark 2010: 87f);
- Combined front and rounding umlaut (as in fem. *øx* ‘ax’ < **akwîsî* < **ak*^{w}*esī*) and umlaut from the third syllable, as in neut. *øðli*/*eðli* ‘character, nature’ < PreSc **aðulija* (subs. 6.4.2 & 6.4.3, cf. Skomedal 1980: 134 and Schulte 1998: 223–229);
- The absence of raising umlaut in certain present tenses of class 4 and 5 strong verbs, exemplified by ON *etr* ‘eats’, *berr* ‘carries’ and *gefr* ‘gives’ (subs. 6.4.2 nt 71);

- Traces of rounding umlaut in preterits of class 7 strong (reduplicating) verbs, as in 3. pers. pl. *søru* '(they) sowed' and OSw 3. pers. pl. *fiøllo* '(they) fell' (subs. 6.4.3 notes 57 & 59, cf. Noreen 1923 [1884]: § 77.3, § 504 anm.1; 1904: § 543; Widmark 1991: 140);
- Cursorily and tentatively: the emergence of vowel harmony in Old Norwegian (subs. 6.6).

The remodelling covers several centuries and a lot of data. Thus, despite a dense discourse, within the limits of a journal article it has not been possible to introduce readers properly to all the intricate riddles of Scandinavian data which mainly scholars of Nordic philology are seeking to unravel. The cryptogram-like approach systematically uses these very riddles for falsification and verification. To ease assimilation of the main line of reasoning, tests against some of these puzzles and some cross-referencing to highlight interdependencies of different arguments are placed in the footnotes.

A sincere effort has been made to spare the reader involvement in the convoluted creative process of trial and error which paved the way for the article. The presentation of main findings in 'Section 2' covers the key findings without introducing too much distractive detail. 'Sections 4 and 5' also start from points that do not require simultaneous knowledge of analytical novelties that will follow later. Nevertheless, the presentation could not be kept totally linear due to the nature of the remodelling; many cross-references to other locations in the text were needed.

'Section 6' presents sound change differently in chronological order, as is done in handbooks. The innovative statements made in this section may be seen as controversial; the argument in the preceding sections, particularly the theory in Section 3, must be assimilated to understand what they are based on. Moreover, it should have been more clearly stated in the article that (unlike 'sections 1-5'), 'Section 6' does not restrict itself to stating conclusions rigorously ascertained in previous sections, but to some extent it also fills in the voids by implication.

The paper was anonymously peer-reviewed and approved for publication in the journal North-Western European Language Evolution ('NOWELE') 70:2 (2017). NOWELE is an interdisciplinary journal devoted to the study of not only the early and more recent history of a locally determined group of Germanic languages, but also purely theoretical questions concerning language development, external language contact and extralinguistic factors contributing to change and variation within those languages.

3.5.4 Methodology

In [P4] and [P5] reconstructive methods of historical phonology are used, to some extent the comparative method and, more comprehensively, internal reconstruction. Further, the approach is founded on strong prior confidence in the regularity of sound

change and the uncompromising traces of umlaut in the data, some of which do not fit well with the traditional umlaut rules. The papers are broadly self-sustaining in their account of methodological issues; some further aspects will be highlighted here.

Theories relied upon include prosodic theory and, in particular for [P5], the Contrastive Hierarchy Theory (see SUBS 3.5.2 above). The reasoning in [P4] aspires to be theory neutral while it is fully compatible with the CHT insofar as it attaches great importance to phonological contrast and its unequivocal relation to assimilatory metaphonic activity, such as umlaut. The statement in 'subs. 1.1' in [P4] is equally valid for both articles; it is assumed for metaphonic feature spreading that "a vowel influences equivalent neighbouring vowels in equivalent positions in an equal manner under equivalent conditions. Conversely, if the influence of a postulated protophoneme is not equal under equivalent conditions, its unity must be critically put into question." On this basis vowel systems are reverse engineered based on an explicit set of simple and stringent theoretical assumptions.

3.5.4.1 On minimalism

Each preliterary Scandinavian vowel must have developed from its relatively well-established Germanic etymological origin to the respective attested correlate among OSc descendants. The knowledge gap between NwGmc at the beginning of our timeline and OSc at the end of it (see SUBS 2.1.1) is often underestimated, as seen in the way in which minimalistic principles have been invoked to justify unnatural phonological shortcuts in this vowel history. Changes in phonetic qualities may often be taken as self-evident and the mere number of steps from a PGmc quality to an OSc one nominally minimised, with little ambition to explain the structural changes of the vowel systems in between. One instance of this is etymological PGmc *$*\bar{e}_1$* in non-prominent syllables, which emerges as */i/ (<i> or <e>), as in OSc *bróðir* < PSc *$*brōþɜr$* < PGmc *$*brōþē_1r$* < PlGmc *$*brāþēr$*. The un-umlauted back vowels in a preceding main stressed syllable solidly testify to the fact that this vowel was no fronting trigger during the umlaut period. In conformity with strict minimalism, however, traditionalists would still reconstruct an allegedly fronted (but yet non-umlauting) *$*\bar{e}$* in example words like *$*brōþēr$*, to avoid assuming a loss of fronting into *$*brōþɜr$* followed again by reacquisition of a fronting feature in OSc *bróðir*. Yet, as [P5] justifies, the best systemic and structural analysis is to reconstruct a low rather than front vowel in this position during the umlaut period. This facilitates a more economical solution, despite increasing the number of steps of change from a purely nominal point of view.

In the exercise of internal reconstruction, it is legitimate to nominally minimise the amount of assumed changes within reasonable limits, as long as this is properly justified in light of other valid considerations. Yet it is not wise to short-circuit explanations to a point where naturalness of sound change in a phonological sense is

sacrificed for purely phonetic minimalism, or where a systemic view of change is sacrificed for more atomistic simplicity.

Historically a case for far-reaching minimalism in Scandinavian vowel history was made by Hreinn Benediktsson (1963: 418–420). Another approach pursuing a more systemic economy of explanation was taken by Elmer H. Antonsen (1967), but criticised by many for being excessively formalistic.[45]

While the diachronic description in [P4] and [P5] is very different from Antonsen′s, the analysis behind it may be understood to restore his respect for formal rigour and a systemic phonological approach to umlaut.[46] This is done for a reason: to solve critical problems of description. Concrete problem solving also had precedence in the creative process of composing this compilation thesis. The necessity to reconstruct a contrast in tonality features between two palatal vowels was first arrived at by the more conventional and basic reasoning in [P4], before analysing the whole vowel system in [P5], which had formalistic implications for systemic contrast and a few more intermediate proto-vowels.

An analogous example for system-driven increase in the number of phonemic vowels followed by simplification by phoneme mergers may easily be identified in a more recent and better documented development of Scandinavian. During the later stages of Old Swedish around 1400 CE, coinciding with the Great Quantity Shift and concurrent with a push chain affecting the quality of many long vowels, the number of vowel qualities was significantly increased (Pettersson 2008: 148–153). A causal relationship between the new vowels and the quantity shift is evident; the truly new phonemes resulted from shortening (ibid.: 151–152 cf. Pamp 1971: 88–89) or from lengthening (ibid.: 149–150; Eliasson 2010: 132) and became phonemic where the quality of former short vowels did not coincide (well enough) with its long counter-part. Evidently no explanation can be economical without considering the causal relationship between nearly simultaneous changes in qualities and quantity. Feature specification may have developed like this:

- Stage 1: long vowels are enhanced by tense articulation: [+long] ~> {[+tense]};
- Stage 2: a contrast shift demotes [long] to a feature enhancement and promotes the former enhancement into a qualitative contrastive feature: [+tense] ~> {[+long]}; the number of underlying qualities of vowel phonemes are regularly doubled;

[45] For criticism of Antonsen see Robert King (1972) and Hreinn Benediktsson (1974). Einar Haugen (1982: 31) made another attempt to seek systemic coherence in umlaut, but without the intermediate proto-allophones that characterised Antonsen′s approach.

[46] The differences are very significant. The intermediate proto-allophones are not at all similar and most importantly [P5] does not reconstruct a fully-fledged panchronistic sub-phonematic umlaut into NwGmc. Instead, the paper joins a mainstream of research in assuming that umlaut in the meaning of a phonological rule arose independently in the north and the west after the breakup of Northwest Germanic.

- Stage 3a: a prosodic quantity shift omits {[+long]} as an obligatory feature enhance-ment for [+tense] vowels and makes length conditional upon syllable structure instead;
- Stage 3b: with stricter prosodic rules for length, each vowel in the system appears with long and short allophones;
- Stage 4: wherever heterophonematic allophones become too similar to distinguish, they merge (some of them immediately) with new phonematic restructurings resulting.

Stages 1-2 could have advanced slowly. They would have had little consequence for the surface phonetics accessible to neogrammarian analysis and hardly any consequences for spelling in Latin characters either. Thus, even if stages 1-2 had occurred very early, we would have a hard time detecting their progression in retrospect. Stages 3-4 on the other hand would have progressed rapidly and they predict exactly the kind of traces in spelling that are attested in younger OSw. Very similar quantity shifts, all with comparable consequences for vowel qualities, occurred over most of peninsular Scandinavian and eventually reached Icelandic, where the systemic potential for permanently doubling the number of vowel qualities has materialised.[47] In OSw more or less immediate mergers limited the increase in short vowels to three (from 7 to 10) and the increase in long vowels also to three (from 8 to 11).[48] Excessive use of atomistic minimalism here will undoubtedly detect only the birth of the surviving new phonemes (indeed the change is typically described thus in the handbooks quoted) and will fail to reveal the actual mechanism for change and the transient increase in phonematic vowels. This increase is recoverable mainly by internal phonological reconstruction, in this case corroborable by sheer luck through a parallel development in Icelandic.[49]

[47] The conspiracy-like emergence of this quantity shift in different Scandinavian languages increases the likelihood that the ancestral dialects of Scandinavian had jointly undergone the same precursory stages, similar to stages 1-2.

[48] Pettersson (2008: 148–150) only accounts for an end state of ten long vowels, while the correct number is eleven, since some later attested dialects have retained a contrast between a more fronted long /ʉ̟:/ resulting from lengthening of short > lax /ʊ/ and a less fronted long /ʉ̱:/ succeeding an original long/tense vowel. A similar qualitative distinction <u> ≠ <ú> resulted from the quantity shift in Icelandic.

[49] Even modern Icelandic shows qualitative distinctions for all vowel accents, which continue to be placed neatly according to historical etymological length. Thus, Icelandic never reached stage 4 and preserves the original logic better. The qualities have continued to be distinguished while formerly long non-high vowels have diphthongised.

3.5.4.2 On ad hoc and circular reasoning

An intriguing question with regard to umlaut research is the potentially circular relation between initial assumptions, hypotheses and conclusions. While I criticise previous research on this very point, my own research is subject to the same risks. Two cases are chosen, where it is very difficult to separate the initial assumptions from the resulting conclusions, since they are interdependent. The first example concerns a theoretical assumption and the second a descriptive one.

Firstly, I take it that the umlaut allophones, unless mutated, were not at first phonetically identical with vowels already existing in the system ([P5]: subs. 3.2), an initial assumption which I coined the 'Inalterability of Proper Features Constraint' ('IPFC'). This assumption is critical for the analysis in [P5] in general and for the solutions to many specific puzzles in particular. In the creative process it was just as much a result of iterative reasoning by trial and error as an intuitively appealing starting point. The question arises: could the logical construction be turned on its head to write a paper on how the known aspects of the progression of umlaut in Scandinavian testify to a mechanism of feature filling as opposed to feature changing rules? This would have been strikingly similar to the approach in Bale et al. (2014), who found no evidence in their data of purely phonological "feature-changing" rules that would switch the polarity of features.

As for my second example, I have accepted that (in the context of the early syncope) vowels of different sonority were deleted at different times, namely **a* first, and **u* last. I base the claim on two arguments: the existing views of the research community and the fact that the assumption enables a very powerful analysis. The latter argument is open to criticism of circularity, while the former is concordant with non-controversial research histories.[50] Scholarly opinion is formed in a collective process, independent from my own line of reasoning. It relies partly on conditions in other Germanic languages and on interpretations of runic attestations; both considerations are independent of my methodology. To further break up any circular logic, we could imagine another paper based on assumptions deducted from characteristics of the data, such as the need to distinguish earlier rounding umlaut contrastive by *a*-syncope from later rounding umlaut contrastive by *u*-syncope.

It could be claimed that the reconstruction of two proto-phonemes **î* and **ï* is *ad hoc*, because this otherwise unnecessary distinction is postulated purely to solve the problem of the distribution of the front umlaut. Such criticism would be unwarranted,

[50] It should be noted that there are presentational distinctions in the sources not accounted for in [P5]. The authors state differently how significant for historical phonology the different times of deletion are. While Skomedal (1980) and Grønvik (1998) base their diachronic sequencing on distinctive dating for *a*- and *u*-syncope, Riad (1992: 114–115) explicitly doubts the consequences of the "finer chronology of the implementation of a change like syncope" for the prosodic analysis of early syncope as a more general "high-level event".

because the improved analysis of the vowel system that this distinction entails solves other problems, too. The same analysis predicts why palatal target vowels sometimes undergo breaking but occasionally do not, predictions which in turn are falsifiable. The analysis is also logically interlocked with postulates about contrastive features of non-palatal triggers of breaking and rounding; the problems related to how *ja-*, *jǫ-*, *jo-* and *ju*-breaking as well as *w-* and *u*-rounding are distributed in the vocabulary in fact become better explained, which again amounts to independent verification.

This is well highlighted by the relationship between [P4], which starts out from the puzzle of the *iʁ*-umlaut as the basis for all further reasoning, and [P5], which identifies the conundrum of OESc rounding umlaut as its point of departure. From these distinct starting points and independent lines of reasoning, their arguments converge towards the same coherent analysis of the vowel system. Thus, the approaches taken in the papers verify each other, reducing the grounds for criticism of *ad hoc* reasoning.

The initial assumptions may ultimately be validated against their potential to solve particular intricate puzzles in the data, such as those listed on pages 116–117 above. The treatment of such touchstones in Scandinavian sound history is very condensed in [P5] (especially subs. 6.4) because of restrictions on article length and the presentation technique. Here there is space to exemplify one such puzzle, illustrated in FIGURE 9, with symbols as defined in [P5] and by measn of introduction in FIGURE 7 above.

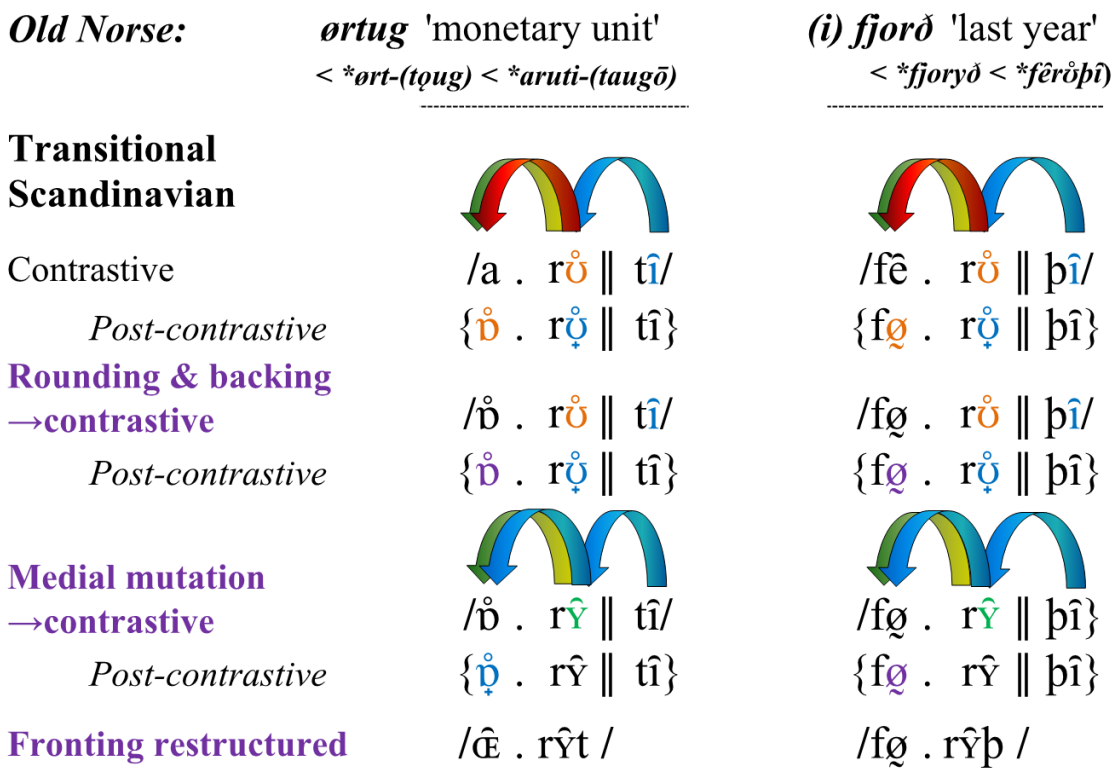

Figure 9. Relayed fronting from the third syllable.

In FIGURE 9 double umlaut with fronting relayed from the third syllable is illustrated by means of the first part of the compound *ørtug* 'monetary unit' < **ørt-(tǫug)*

< **aruti-(taugō)* and contrasted chronologically against breaking from the second syllable in **feruþi-* > *(i) fjorð* 'last year' (cf. [P5]: subs. 6.4). Other well-known example words, albeit with long triggers, are **aðulija-* > *øðli/eðli* 'nature character' and **felunijaz* > *Fjǫlnir* 'a mythological king' (Skomedal 1980: 134).[51]

Such words, all with medial **-u-* and a fronting trigger in the third syllable, must have developed by a consecutive series of early rounding umlaut, followed by front mutation in the medial syllable and completed by regular front umlaut triggered from the second. Differentiating the dating of early rounding umlaut (contrastive by *a*-syncope) from that of *i*-umlaut (contrastive by *i*-syncope) provides a chronological window for a front mutated medial vowel */u/ → */ŷ/ to have become an active trigger before the phonemicisation of front umlaut.[52]

The sequence is consistent with the right-hand example. In **feruþi-* > *(i) fjorð* 'last year' primary *jo*-breaking occurred first (contrastive by *a*-syncope) just in time to inhibit front umlaut in its productive stage. Front mutation of the medial syllable must have occurred in the same chronological window as in **þrŷtî*, because the phonological context was equivalent, but here the activation of the trigger had no consequence; the broken main stressed vowel was already inalterable by fronting, due to the fact that it was already contrastively back umlauted but had not yet segmented into the sequence *-jo-* of a glide and a vowel.[53]

Admittedly FIGURE 9 reveals that the remodelled explanation of umlaut also occasionally requires auxiliary assumptions; the laminalising mutation of fronted medial dorsal vowels, such as */u/ → */ŷ/, is an example of that. Luckily it is partly corroborated by at least one independent puzzle in the data, namely the subjunctives of class 1 weak verbs which are front umlauted in a subminimally similar structure in ON *telði* < (western) **talîðî* ← PreSc **taliðī* ([P5]: subs. 6.2.1 chronological statement i).

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[51] A possible short trigger parallel is **anuðîz* > *endr* 'ducks' (see however [P4]: 19 nt 10).

[52] At this time a medial syllable in this position could in the present analysis carry the same vowel contrast as main stressed syllables (for the round laminal trigger vowel cf. Skomedal 1980: 134). Again, the solutions in the different parts of the cryptogram-like analysis rely on each other.

[53] Note that the same early chronology for a back-umlauted vowel should apply to *r*-breaking. It cannot be a coincidence that all the words involved, exemplified by **skurtijōn-* > OSw *skjorta*, have fronting triggers. This chronology can be used, as in 'subs. 6.2.4' of [P5], to explain why a front-umlauted vowel appears to have undergone breaking in some case forms of the verb 'to do' (OSw pret. 3. pers. *gjorþe*) but not in others (OSw infinitive *gøra*): In some forms, front umlaut was pre-empted by an earlier laminal mutation enabling breaking, while in regularly front-umlauted forms, no pre-emptive mutation had occurred and fronting was too late to be followed by breaking, which had already finished earlier.

3.5.5 Further reflection on the analysis of papers [P4] and [P5]

In this subsection, problems and inconveniences in the solution to umlaut presented in [P4] and [P5] will be accounted for; some will be discussed, others only flagged. First the rapid pace of language change during the transitional period is assessed, second some inconveniences in applying the CHT and third some problems of diachronic description are addressed. In a final subsection issues of prosodic theory are revisited.

The solution reached implies that the outcome of vowel system restructuring recurring at intervals as close as two generations of language learners was near-uniform over almost the whole territory of Scandinavia. To conform to later data, the sound changes should have extended from innovation centres to all peripheral dialects (or at least those with documented modern descendants) in identical sequences; if the diffusion of a later change had overtaken an earlier change and thus the mutual sequence had been inverted in some dialects, more phonological diversification should have resulted.

This scenario is at first glance not very attractive (see criticism of Grønvik in Spurkland 2006: 341–344) but upon reflection the origin of the challenge is here not in my analysis but in the real-world data. The very few other scholars that have attempted to describe this era in terms of successive phonological systems (Hreinn B. 2002a [1970]: 206ff; Skomedal 1980: 136–138; Grønvik 1998: 16–26) have also been compelled to invoke recurrent systemic changes. Furthermore, many peculiar traits that set the Scandinavian languages fundamentally apart from West Germanic must have developed around this period. These include the genesis of very central pronominal and other extremely frequent common Scandinavian vocabulary, such as *hann/*hõn* ‘he/she’, *engi-/ængi-/ingi-* ‘none’ < **ɛin-gi-*, *nǫkkurr/nakkvarr* ‘any, some’ < **ne-wait-ek-hwarjaz̨* and *ok* ‘and’ < *auk*. All these confirm rapid cohesive language change, which is not unparalleled in documented sound history: the Great Quantity Shift in late medieval peninsular Scandinavian (see SUBS 3.5.4.1 above) and the Great Vowel Shift in Middle English are cases in point.

Natural mechanisms could explain why diversification during rapid sequences of sound change often becomes less significant than perhaps expected. Odd dialects born in the process could be overrun or absorbed by later purely socially driven dialect expansion from the same innovation centres. The pace of diffusion may not be quite as high as that of innovation; the former cannot be determined by the methodology used. Certainly, it is not necessary that each innovation reached the periphery before the next innovation started at the centre. Moreover, the sequencing may reflect chained causalities that are hard to detect in retrospect but may have determined the natural sequence of events.

One vulnerability to criticism is the significant temporary increase in the number of phonemic TSc vowels, all in anticipation of a major simplification by phoneme mergers entering ASc. This kind of development is not unparalleled in vowel shifts, as

exemplified in SUBS 3.5.4.1 above. Further, it is not necessary to assume that all intermediate proto-vowels appeared or merged concurrently (see [P5]: subs. 6.4.3 nt 75).

At one point in the analysis of [P5] (subs. 6.5, cf. 'figures 7, 9 and 13') the timeline is particularly congested with changes, namely in the 'contrast reshuffle' around 700 CE, which separates TSc from ASc. Somewhat cataclysmic traits could be expected to characterise this rearrangement of the features [ATR] and [back] which was compelled to absorb the functional load of a dissappearing feature [coronal]. Nonetheless, the idea transiently floated in [P5] (subs. 6.4.1 note 77) in connection to 'chronological statement (xv.c)' deserves further consideration. The contrast reshuffle can perhaps be analysed more economically by separating an earlier stage, where segmentation happened in selected contexts and [coronal] was first replaced only in reduced syllables (making the trigger active for [round] earlier). By such chronological decoupling, forms reconstructed for 'Late Transitional Scandinavian' ('LTSc') could be adjusted for the lexical examples discussed in [P5] (subs. 6.5.2), exemplified by OSw *hiorþ* 'herd' < EASc **hjǫ́rðǫ́* < ... < Early TSc **hi̯ę́rðu* < **hêrðu*. Accordingly, an earlier secondary rounding umlaut could be accomodated instead of the somewhat encumbered explanation in 'chronolonical statement (xv.d)' of [P5]. The intention is to return to this question in future publications.

During the stage of diversification through umlaut it is necessary to assume that a contrast of back/front co-occurred in the hierarchy of contrastive features with a more highly ranked contrast for laminal/dorsal; in other words, that both contrasts could simultaneously be present in the specification of the same vowel ([P5]: subs. 6.4.3). The parallel given to Kalmyk/Oirat Mongolian languages in 'note 72' of [P5] of course only stands insofar as that analysis does (Ko 2012: 119ff, 122ff). In any case, whatever may be said of this co-occurrence of dorsality and fronting, there is a need for a feature-based analysis of languages that are rich in central vowels. When these are analysed by means of binary features, this type of challange will inevitably recur. The problem of central vowels needs a solution and the one based on a co-occurrence of tonality features is no more complicated than any conceivable alternative.[54]

[P5] is based on the CHT. Any conflict between the resulting phonological analysis and its Contrastivist Hypothesis would by definition be highly detrimental; this raises some questions. One briefly highlighted in [P5] (p. 220 nt 48) could be framed as a

[54] A possibility which occurred too late in the creative process to be incorporated in the article would be to replace the contrast front vs back with one of palatal vs velar, bringing an incontestable articulatory logic into play. In that case the front-umlauted back vowels would be dorso-palatal, while coronal vowels would be lamino-palatal. Back vowels are dorso-velar while back-umlauted front vowels would take up the remaining slot, i.e. lamino-velar. This analysis would make the reason for diphthongisation more than obvious; it is anatomically impossible for the tongue blade to approach the velum in a coincidental lamino-velar gesture, so the articulators would have to become engaged in a swift sequenced movement, in other words, to articulate a centring diphthong.

couple of questions: can [laminal] be a correct analysis of a contrastive feature that is similarly spread from (and hence equally contrastive for) a glide */j/ and from an anterior fricative */z/? And further, how, in words like **saliðō* > *selða* or **matiðaz* > *mettr*, can this feature be spread from two homorganic adjecent coronals, neither of which is */j/ nor */z/?

On a similar note, the origin behind the appearance of [+/–back] during 'Early Transitional Scandinavian' ('ETSc') is hard to explain. In [P5] (subs. 4.4.1 and 6.4.3) it is explained as a repair for a clash when a [+/–coronal] trigger vowel spreads the feature {+/–coronal} onto a [+/–coronal] target vowel, under conditions where the feature values are opposed. A repair for a feature clash is intuitively a good explanation but it would be strengthened if [+/–back] was identified as an existing feature employed for contrast in the phonematic system elsewhere (e.g. for consonants) and thus readily available to the repair.[55]

A further theoretical question affects the assumptions of umlaut. Why do intervocalic round glides fail to cause a rounding umlaut in examples such as *strá* 'straw' < **strawa* or *tífar* 'gods' < **tīwōz* [P5] (pp. 234–235)? Clearly this appears to be the only exception concerning an inert transmission mechanism that must be assumed, which is inconvenient for a good model. First, it must be noted that there are no perfectly equivalent counterexamples concerning front umlaut by intervocalic **-j-*. No forms similar to *+straja* or *+tīǰōz* could have existed because PlGmc **-j-* in such positions had generally been deleted much earlier in PGmc (Ringe 2006: 134) and new cases of intervocalic **-j-* caused by Sievers′s law never stood between the first and the second syllable. The rule that must be formulated is that feature spreading was triggered only by a vocaloid which stood beyond a sonority minimum, regardless of syllable border. Accordingly, it must be assumed that a glide *-j-* in the structure **-VujV-* also stood beyond a sonority minimum. This assumption is necessary in order to explain the attested front umlaut in such structures, exemplified by f. nom./acc. sg. **auju* > *øy* 'island'. Indeed, the archiphoneme **U* had been less sonorous than the archiphoneme **I* and here this sonority scale applied even if the **u* was syllabic and **j* not. The very fact that **-j-* in this context had been exempt in the first place from the earlier deletion rule just mentioned close above appears to confirm that this glide did not count as 'intervocalic' in the same sense as in other contexts (i.e. it did not coincide with a sonority minimum). This condition or status could explain both phenomena in either case (umlaut or deletion) where the treatment of 'intervocalic' *-j-* differed from that of 'intervocalic' *-w-*.

[55] One possibility is that [back] was part of the system for non-prominent (fully reduced) vowels instead of [coronal] but this would put it above [ATR] in the hierarchy, otherwise */ʌ/ would not be a breaking trigger (see 'Figure 7' in [P5]). This is only one typical example of how statements are interlocked by theory and have repeatedly engendered falsifiable statements during the creative process (see SUBS 3.5.3 and SUBS 3.5.4.2 above).

The example name *Yng-/Ing-* < **ïngw-* ([P5]: subs. 4.3.2 nt 33, subs. 4.5.2) has no clearly established etymology. In most attempts to identify it as inherited in Germanic, a raised Pre-Germanic full grade vowel **e* instead of Pre-Germanic **i* has been sought in comparative material (AEW: s.v. 'Yngvi'). Thus, it could have been more clearly stated in [P5] that for this particular lexeme the vowel **ï* is reconstructed on the basis Scandinavian umlaut, so its phonological behaviour (beyond the fact that it differs in the east and west) cannot be used to support the umlaut theory without resorting to circular reasoning. Besides the option to reconstruct an inherited PlGmc **i* in this word, it is possible that in Proto-Scandinavian an **ï* (as a lesser marked alternative than **î*) was substituted for a West or East Germanic **i* upon borrowing. The Latin name *Ingvæones* (AEW: s.v. 'Yngvi') does not prove the origin of the vowel, since raising of **e* > **i* would already have occurred by the time of borrowing into Latin.[56]

3.5.5.1 On morphological generalisations

Most of the numerous anomalies in the Old Scandinavian data have been explained by morphological generalisations, such as paradigmatic levelling or analogical replacements. To assume such generalisations is not wrong *per se*, but it is problematic how they have often been applied to Scandinavian umlaut.

Firstly, the explanatory economy is exploded by the large and diverse residual of phonologically ill-fitting data, which have been admitted for these explanations. Secondly, little effort is made to identify which types of generalisation were predominantly productive under distinct circumstances and development stages (e.g. during and after the umlaut period, respectively); instead the whole typology has been kept available to arbitrarily seek solutions to any problem that arises, rendering the procedure *ad hoc* (Rischel 2008: 196f). Thirdly, while the use of morphological generalisations makes explanation quite versatile, it is clearly insufficient to eliminate all residuals of ill-fitting data. For example, it remains unexplained why front umlaut is often (but not always) absent in light target syllables (as in ON *stað*), but this is by no means the whole story; the data is full of oddities that are recalcitrant to this sort of non-phonological explanation. One such example is the vocalic alternation in the high-frequent verb for 'to do' (Swedish) *göra-gör-gjorde* < **garwi-*, the only Scandinavian word with this particular inflection and the only word with a front-umlauted vowel that seems to have under-gone secondary breaking.

The stated objective in [P4] (subs. 7.4) and [P5] (p. 187) was to reduce the need to resort to explanation by analogy and morphological generalisation, at least excessively or in an arbitrary manner. Yet there are paradigms where morphological explanations are needed. Besides the cases discussed in the articles, the following examples are representative (but not exhaustive):

[56] Swedish dialectal *ink* 'ulcer' is not an equivalent case since the broken form is attested in Danish *-iunc* 'knoll, hump' (AEW: s.v. 'ökkvast').

Firstly, the light-stem superlatives in *-*ista*- should come out without front umlaut, as attested only in ON *baztr* ‘best’. Otherwise the data show fronting as in *fremstr* ‘most anterior’. The forms would have been under strong analogical pressure from both light-stem comparatives and heavy-stem superlatives, both with fronting. With numerous heavy stems in ON inflecting as *langr* ‘long’ *lęngri/lęngstr* and having established front umlaut as a morphological marker, it is all but expected that among the very few light stems e.g. *baztr* ‘best’ in analogy with *bętri* is repaired and discarded in favour of *bęztr*.

Secondly, the nom./acc. pl. of *i*-stems are expected to show front umlaut, but they are attested without, as in *staðir* ‘places’. Here they differ from consonant stems and (insofar as the nom. pl. is concerned) from masculine *u*-stems. The un-umlauted forms may have several sources; the consistent lack of fronting in the singulars together with the datives and genitives of the plurals are certainly one. On this question the economy of explanation is no worse than in competing hypotheses.

A third example is the conjugation of indicatives of strong verbs. The 2. pers. plur. show no traces of expected front umlaut, as exemplified by ON *takið* ‘you take’. This levelling is paralleled in OESc by levelling in the 2. and 3. pers. sg. as in OSw *takęr*, and by reverse levelling in ON of fronting in the 1. pers. *tek* ‘I take’. Note that as a result, person is not marked by front umlaut anywhere in the OSc conjugations and hence *takið* conforms to a systemic pattern in this regard.

Regarding early breaking ([P5]: subs. 4.1.2.2 & 4.3.2), eastern Scandinavian breaking in verbs such as *siunga* ‘to sing’ and *sliunga* ‘to sling’ must have originated in the 1./3. pers. (indicative) pres. pl. and 1. pers. sg. as well as infinitives; breaking could not have been regular in the 2./3. pers. sg. and 2. pers. pl. owing to the coronal vowel in the personal ending. The pattern of paradigmatic levelling in these broken verbs is no different from the pattern generally applied in eastern Scandinavian strong verbs.

A final question to flag is a recalcitrant problem in the data, which may have different solutions. In ‘Table 6’ in [P4] the example words **fawîzō* > *færra* and **fawîþu* > *fæð* are contrasted with **hawîðō* > *háða*. In the light of this data it is difficult to determine why *mawilō* ‘maiden’ comes out as *meyla* rather than *mæla*. If the difference is phonological it may shed further light on the more precise chronology of *w*-deletion.

3.5.5.2 On prosodic theory and prominence assignment

The research history on the chronology of syncope is recounted in SUBS 2.3.1 and ends with a sneak preview of the prosodic analysis in [P4] and [P5]. In these papers the analysis relies faithfully on the modern *status quo* of prosodic theory insofar as main-stress assignment, syllabification and moraicity of phonemes are concerned, but postulates important adjustments to syllable prominence assignment, largely based on inferral from observations about umlaut and syncope. Much like in present-day Finnish,

syllable weight (i.e. duration) would still in Proto-Scandinavian have attracted syllable prominence (i.e. pitch/loudness) within strict limits, dominated by less violable constraints.[57] Instead, mora count beginning from right to left was the deciding factor. The formula for mora count and pitch flattening in bimoraic syllables in fact would have deprived all word-final syllables of prominence, regardless of weight.[58]

This destressing of word-final heavy syllables conforms to the observation that while such syllables did not trigger an early rounding umlaut, they did trigger front umlaut. In TABLE 8 above, the example word m. nom. pl. *bægir* 'shoulders' < PSc **bōgī̄z* is quoted to illustrate that, in keeping with Contrastivist Hypothesis, a front umlauting long trigger *-ī̄-* must have been contrastive for a feature governing tongue blade advancement. At the same time the contrastive rounding of the resulting *-æ-* [ø:] must have originated in a lip-rounding feature of the PSc target vowel *ō*, a vowel hence denoted $\bar{\underset{\circ}{o}}$ in [P5] with a ring above for contrastive rounding. Considering that there were no front-rounded (such as *y* and *ø*) or back-unrounded (such as *ɯ* and *ɤ*) vowels in Proto-Scandinvian it is not possible to build a single binary CFH which accommodates both requirements, since round vowels contrast with non-round vowels and back vowels with front vowels. Hence the vowels $\bar{\underset{\circ}{o}}$ and $\bar{\imath}$ must have belonged to different branches of the feature hierarchy, with each sub-hierarchy employing different features for contrast. The fact that long vowels in early Germanic had already been subject to different rules of reduction in different prosodic positions for some time is clearly seen from the "*Auslautgesetze*", or sound laws of final syllables (see [P4]: 34f nt 22 with references). This testifies to a phonological distinction conditional upon their prosodic position.

Prosodic considerations similarly concern a light second syllable following another light main stressed syllable (CV.CV.-). In [P5] the phonological activity of trigger vowels in this position are analysed to show that the contrasts in this light second syllable equalled the vowel contrasts in main stressed light syllables but not the contrasts in fully reduced light syllables. The same conclusion is recounted in SUBS 3.5.3 and 3.5.4 above (cf. in addition the explanation of FIGURE 9 and in NT 52). Note that it would be perfectly compatible with the umlaut theory to consider a light syllable in this position 'less reduced' rather than (relatively) 'prominent' and even to accept

[57] The case may be illustrated by example (33) in Karvonen (2005: 96) consisting of two light-heavy trochees, namely ***ra***.*vin*.***to***.*lat* 'restaurants'. Here a constraint against prominence on the last syllable, even if it is bimoraic, optionally assigns prominence to the penultimate light syllable in boldface. In my judgement (as an L2 speaker since early childhood and having consulted one native speaker) the distressing rule also deprives words with the structure ***va***.*kuut*.*taa* 'to ensure/insure' and ***ta***.*kuu*.*seen* 'to a guarantee' from full secondary stress, even if the the last syllables contain long vowels, which in Karvonen′s (2005.: 81–94) analysis signifies even greater weight. The pitch remains flattened even if it may attract a poetic beat.

[58] Note that the analysis in [P5] not only permits but requires that the more traditional solution is equally valid, as it applies to a later ASc stage after some restructurings [P5] (p. 241 nt 79).

fully reduced realisation in some contexts contingent on utterance prosody, as long as in some contexts in this position the language learner could retrieve the richer vowel system and interpret it as underlyingly lexical. It is an expression of prosodic minimalism inspired by Rischel (2008: 192) that in [P4] and [P5] the analysis abides by a binary logic and restricts the terminology to 'prominent' versus 'non-prominent'.

It is difficult to envisage a more reasonable motivation for the coexistence of different feature hierarchies for vowels than different degrees of prominence of the syllables that contain them. While this view, arrived at by an intuitive process of elimination, of course stands to be corrected, it is the basis for stating in [P4] (p. 44) that it is "plausible" that "long vowels belonged to two different vowel systems in complementary prosodic distribution".

Another critical oddity of the analysis in [P4] and [P5] is the two different directions of the mora count. The second mora from the left would have been assigned prominence in consequence of belonging to the main stressed foot, hence from left to right. The rest of the word would have been assigned prominence based on a count from right to left. The same conflict is seen in the algorithm for pitch flattening within each foot; while the right-hand mora determines the prominence of bimoraic syllables outside the main stress, the prominent left-hand mora dominates the second mora in the main stressed foot (here it is not essential to the hypothesised solution that the second mora from the left was fully prominent). This contradiction in directionality is not quite so peculiar considering the very particular order in which prosodic words were computed in early Germanic (Riad 1992: 67–70; 104–105). In this context it is conceivable that the main stress, which was assigned first of all in the lexicon before syllabification and independently of the subsequent foot algorithm, could dominate a whole stem-initial bimoraic domain from left to right. The direction of the foot algorithm and assignment of syllable prominence in the rest of the word would not affect this condition (Riad 1992: 99–104).

All things considered, are these quite significant adjustments to mainstream Proto-Scandinavian prosodic analysis ultimately the only (or the best) way to reconcile the insights on umlaut presented in the papers with the reconstructible relative order of syncope? This is a question for the wider research community to assess and discuss further.

Besides this broader issue, there is a minor misrepresentation of prosodic theory in [P5] (subs. 3.1) insofar as syllabification of medial clusters consisting of stray segments are concerned but it does not affect the argument. In Riad (1992: 60, 86) it is assumed that such clusters tend to be subject to onset maximation unless sonority relations require assignment to the coda; thus extrametrical clusters consisiting of an obstruent and a liquid are assigned together to the onset. Thus a preferred syllabification of the species 'salix petandra' should be *<u>*e*</u>.*l<u>u</u>s*‖*tr<u>a</u>z* instead of +<u>*e*</u>.*l<u>u</u>st*‖*r<u>a</u>z*. The rule does not however affect the suffixes *-*ista*- and *-*iska*- as in **ba.tis*‖*taz* 'best'.

Another issue affecting the argument is the chronology of syncope in derivatives with these suffixes. As pointed out by P. Kiparsky (2009: 26, 37, 42), the delay of vowel deletion caused by word minimality in light stem bisyllables was upheld by purely phonological constraints only when the vowel occurred in absolute word finality. Thus while acc. sg. TSc **staðï* was indeed inhibited from becoming subminimal monomoraic *+stað*, there was no such prosodic constraint preventing m. nom. sg. **staðïz* from becoming bimoraic ASc **staðz*. In the analysis of [P4] and [P5], however, this would presumably not have happened (cf. runic **garuz** in [P5]: nt 22 and discussion in SUBS 2.3.1 above). It should have been more clearly stated in these papers that this non-deletion was upheld by morpohological generalisations. Such non-deletion was however less likely to be upheld in EASc m. nom. sg. *+baːtïstz* 'best' or m. nom. sg. *+daːnïskz* 'Danish'. Hence, provided that the number of moras in the rhymes could be regulated, m. nom. sg. **danskz* and **batstz* could possibly have been well-formed prosodic words already in ASc. Thus, contrary to my categorical statements in [P4] (pp. 62–64), syncope may have occurred in these words soon after the TSc rule assigning prominence to the first two moras from the left was altered. Accordingly, syncope in **danïskz* > **danskz* could have been even equally early as in **danïskōz* > **danskōz*.

Nevertheless, the corresponding second syllable vowel **-ï-* could not have been deleted this early in the f. nom. sg. **daːnïs.kʊ̊* or **baːtïstʊ̊*, since the position was protected by the mora count from right to left; it was less reduced than the ultimate syllable and in this capacity was protected from deletion as long as *u*-syncope had not deleted the word-final vowel. This is clearly seen from the f. nom. singulars OSw *annor* 'other' < **anǁnaːrʊ̊* and *gamul* 'old' < **gaːmaǁlʊ̊*. In the light of this data there is hardly any escape from assuming a morphological generalisation in f. nom. sg. *dǫnsk:* if the ultimate vowel was regularly deleted first, then the rounding umlaut in the vowel *-ǫ-* must have been introduced by analogy.[59] If, on the other hand, the rounding umlaut was phonological, then the medial blocker vowel must have been deleted by suffix analogy originating in the heavy stems and/or in the nom. sg. of the other two genders.

3.5.6 Observations on contemporary studies

The focus of umlaut research has gradually shifted from Scandinavian descriptive diachronic linguistics to more theory-driven work by scholars in general linguistics. The post-war rise of theoretical phonology brought in new researchers and, apart from Gun Widmark, many of the Scandinavian scholars who adopted structuralist phonology in

[59] The only way to keep morphological generalisations out of the equation here would be to assume a mutation of **daːnïs.kʊ̊* > **daːnůs.kʊ̊* > **daːnůsk* > etc., which is not ruled out in the light of other such mutations, such as illustrated in FIGURE 9 above, but not a very attractive option either.

umlaut research were from the west, such as Trygve Skomedal (Norway), Einar Haugen (Norwegian-American), Hreinn Benediktsson (Iceland) and Helge Dyvik (Norway). After the work of Michale Schulte (1998) the leading scholars except Jørgen Rischel have been active i North America, including Anatoly Liberman, Joseph B. Voyles, Gregory Iverson and Joseph Salmons, as well as Paul Kiparsky. The discussion conducted in [P4] and in SUBS 2.3 above brings us up to the slides of David Fertig (2013), which fortunately are again, after being mentioned as withdrawn in [P4], available online.[60]

Since my papers were finalised, important and relevant research has been published by B. Elan Dresher (2018), though the ideas were in essence available in Dresher (2015a) at the time of writing [P5] (see pp. 179–181). The application of the CHT on Old Scandinavian in research by Tifrit and Voeltzel (2015) also deserves a mentioning, even if the analysis is relevant only remotely, as they deal with later consonant systems. Sandstedt′s analysisis of Old Norwegian vowel harmony makes use of tongue root retraction, just as my suggestion made cursorily in [P5] (subs. 6.6), but his approach is different on many accounts. He does not define contrastive features by means of binary hierarchies and does not treat feature spreading primarily through a target-trigger analysis but by conditions for blocking.

Another recent work is the chapter by Heikkilä (2014b) published in the same volume as [P3]. It is is worth mentioning since it refers to toponyms discussed in [P2] and [P3] and may be read by the same audience.[61] Heikkilä (2014b: 315) claims that "the North Germanic *i*-umlaut caused by a *disappearing* second syllable vowel [i]" was "noticeable earlier" than the North Germanic "*i*-umlaut caused by a *remaining* second syllable vowel [i]" and goes on to claim that the later umlaut had not yet fronted the targets in the *Gesta Hammaburgensis* manuscript by Adam of Bremen, written around 1075, where *Hälsingborg* is written <Halsinpurgh> and *Hälsingland* is written <Halsingland>. Unfortunately, the chronology of front umlaut that Heikkilä relies upon does not take into account the unanimous post-war rejection of Axel Kock′s three-period theory. This is evident in the way Heikkilä still assumes that front umlaut by a remaining trigger was very late (see SUBS 2.3.2 above and [P4]: Section 2). Further, he also fails to notice that his phonological interpretation of the inconsistent spelling makes the data come out contradictory, because the same manuscript shows fronting in the name <Wendil> < **Wandila-*. A better understanding of the spelling is achieved if considered that Old Saxon orthography did not mark a Saxon front umlaut and that a Latin text written in an Old Saxon cultural context cannot be probative of Scandinavian spelling. This is easily also proven by the name <Gronland> for *Grønland* 'Greenland' in the same manuscript, which according to any umlaut hypo-

[60] The new address is http://www.acsu.buffalo.edu/~fertig/DFertigResearch.html

[61] For evaluation of the whole doctoral thesis, Heikkilä (2014a), see SUBS 2.2.2 (with NT 16) and SUBS 3.4.3 (with NT 35) and the discussion on *Kymmene* in SUBS 3.4.4.

thesis (including in the obsolete classic three-period chronology through a "disappearing" second syllable *-i-* "after heavy syllable") had undergone *i*-umlaut quite precisely 500 years before Adam of Bremen′s manuscript.

3.5.7 Errata and corrigenda

There are a number of omissions in the proofreading of [P5]; to mention a systemic one, the use of blank spaces is not consistent. In both [P4] and [P5] the accusative plurals of feminine consonant stems have erroneously been assumed to be identical with the nominatives. The error is regrettable as it concerns the content, but its correction strengthens the argumentation since the nominatives are even more isolated and less likely to be analogical.

For [P4] the following corrections are necessary:

Page 11 'Figure 3': The syllabification of the LASc example word *frɛ.mïz* is erroneously rendered *frɛm.-ïz*. A corrected image is represented as FIGURE 2 in SUBS 3.5.1 above.

Page 19: In the paragraph beginning "Therefore...", in the eighth line, delete "/ acc."

Page 20, 'Table 2': In line e) delete "/ acc."

Page 22, 'Table 3': In the right-hand column in the line beginning "'nuts' f." delete "/ acc."

Page 23: In the paragraph beginning "Some triggers...", at the juncture of the fourth and the fifth line, delete "/ acc."

Page 35: In the paragraph beginning "With the...", in the sixth line, delete "/ acc."

Page 37: In the first paragraph, in the fifth line, delete "/ acc."

For [P5] the following corrections are necessary:

Page 173: On the antepenultimate line in the penultimate paragraph the full stop, the word "therefore" and the subsequent comma should be replaced by a comma and the word "since".

Page 174: On line beginning "shifts", insert the word "end" between "its" and "by".

Page 180: In the last line replace "with posterior" by "from posterior".

Page 182, 'Figure 4': The example word *quœrn* should read *quœrn* and *fiœþẹr* should read *fiœþẹr*.

Page 184, 'Figure 5': "Proto-Seandinavian" should read "Proto-Scandinavian"

Page 184: In the seventh line delete "/acc."

Page 188: In the first paragraph of 3.1 on the seventh line the example word **ê.lǫ̂st.rʌz* should read **ê.lǫ̂s.trʌz*.

Page 188: In the first paragraph of 3.1 on the ninth line the example word **gas.tîz* should read **gas.tîz* (without the last letter underlined).

Page 190: In the sixth line the preposition “for” should read “of”.

Page 192: In ‘note 19’ replace “before ASc” with “at the latest during ASc”

Page 195, ‘Table 6’: In last column delete abbreviation “PPSc” between “<..” and “< **þrîskwʌn*”.

Page 197: In ‘note 22’ in the fourth-last line replace “late” with “later”.

Page 199, ‘Figure 8’: The example word *quœrn* should read *quœrn*; see corrected image in FIGURE 10 below.

Page 199, ‘Figure 8’: No ring should appear above the *ɒ̊* in the ETSc example word *mǫ̊rk‖ɒ̊ʌn*; see corrected image in FIGURE 10 below.

Page 199, ‘Figure 8’: Under the upper “ETSc” to the left, the “ETSc” immediately below should be replaced by “LTSc” ; see corrected FIGURE 10 below.

Page 199, ‘Figure 8’: The example word {kmę̊r‖nʊz} should read {kwę̊r‖nʊz}; see corrected image in FIGURE 10 below.

Page 199: In the antepenultimate line the words “the ancestor of” should be inserted after the comma before the words “a syllabic”.

Page 201, ‘Table 8’: The example word **êlǫ̊st‖rʌz* should read **êlǫ̊s‖trʌz*.

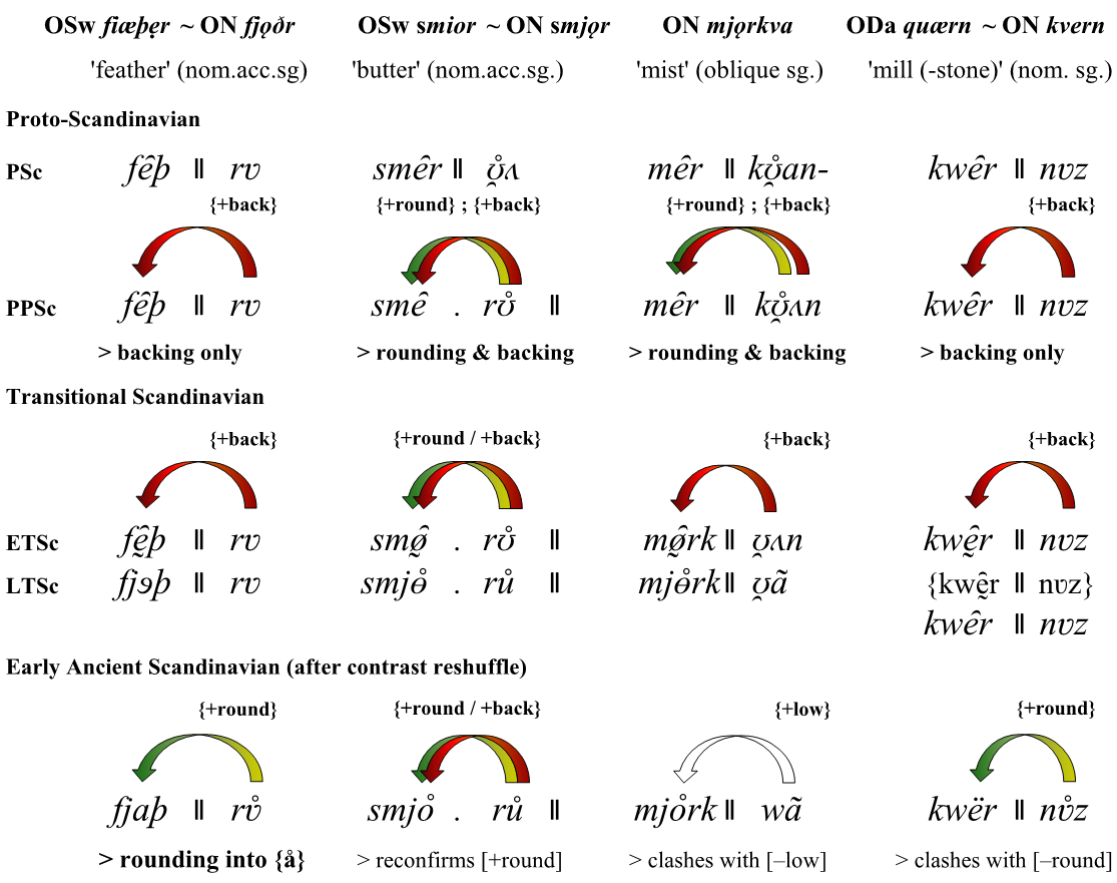

Figure 10. A corrected reproduction of ‘Figure 8’ in [P5].

Page 203, ‘Figure 9’: The thicknesses of the demarcating lines are not calibrated properly according to the ranking of each feature in the CFH; see corrected image in FIGURE 11 below.

Page 203, ‘Figure 9’: In the second feature hierarchy from the top, the stage of the language is not ETSc but LTSc; see corrected image in FIGURE 11 below.

Page 203, ‘Figure 9’: In the second feature hierarchy the symbol for the non-low > non-coronal > round > non-back umlaut vowel should not be o̱ but o̎, with the diaeresis above instead of underneath it; see corrected image in FIGURE 11 below.

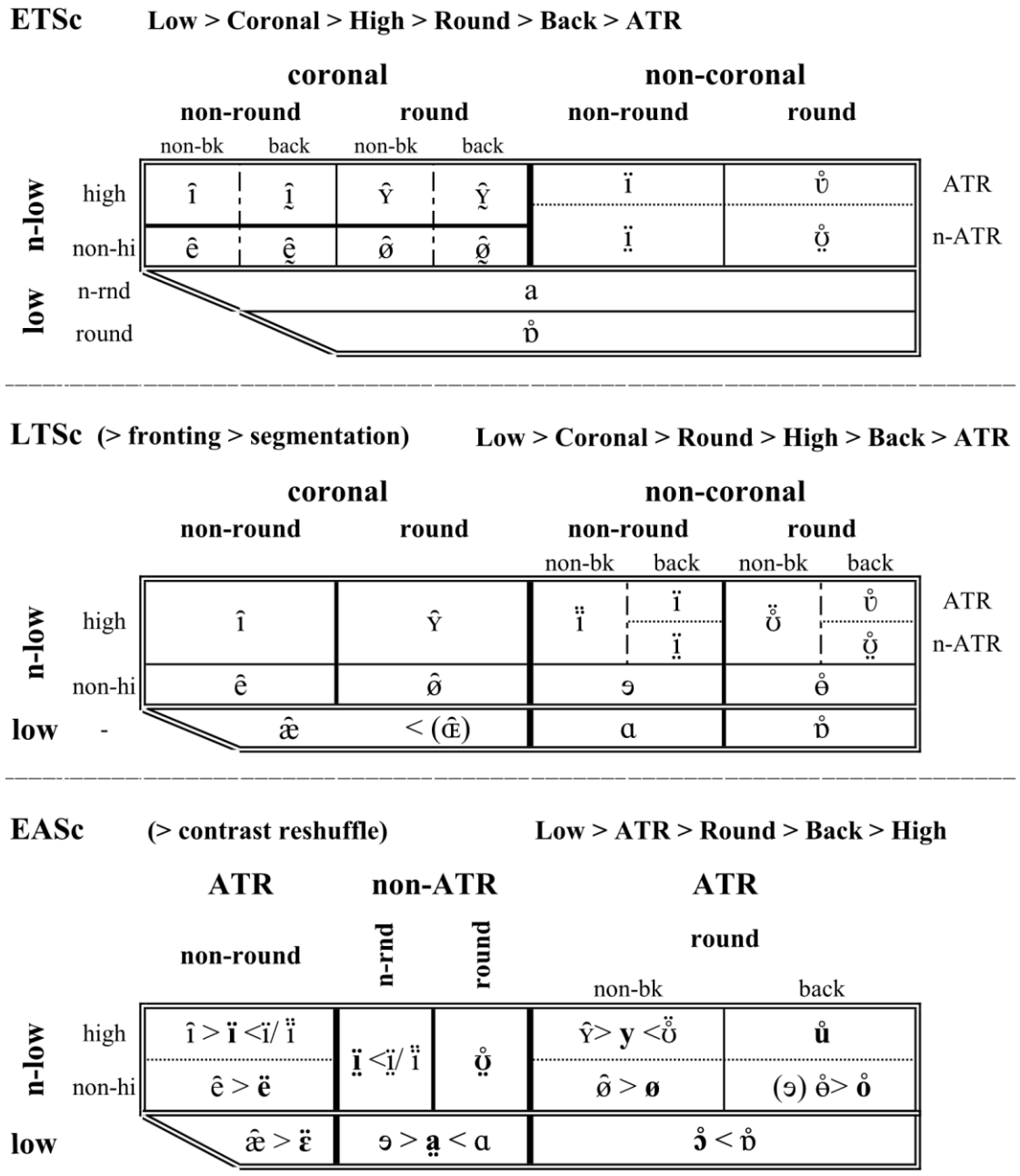

Figure 11. A corrected reproduction of ‘Figure 9’ in [P5].

Page 208: At the end of the third line in the second paragraph replace “and” with “in”.

Page 208: In the penultimate line of the second paragraph delete “not” between “which did” and “in the east”.

Page 214: In the eighth line delete “of” between “by” and “this”.

Page 216, ‘Table 10’, row i): Delete “/ acc.”

Page 217: In the antepenultimate line replace “equally prominent” with “likewise prominent”.

Page 218, ‘Figure 12’: The example **da-nis-kȭ* should be hyphenised **dan-isk-ȭ*.

Page 219: In the fourth line in the paragraph under ‘Table 11’, replace “**-îz/-êz*” by “**-îz/-ïz*”.

Page 222: In the penultimate line of the first paragraph in ‘subs. 6.1’ replace “prominent syllables” with “prominent moras”.

Page 226, ‘Table 12’: The identical example forms ***ka**.tí̲l̀z* in the fourth and sixth rows of the second column should have the vowel *í̲* underlined and the symbol before the words “distinctive” in the fifth and sixth row should not be “→” but “>”.

Page 227: On the seventh line underline the vowel *í̲* the example word ***ka**.tí̲l̀z*.

Page 228: In the fourth line replace the symbol “<” before the word “Latin” with “←”.

Page 228, ‘note 57’: In the fifth line from the end the tilde on **-Ṽn#* should be visible.

Page 229, Example (2) Cases of *r*-breaking: The accentuation of “<~***gǫ̊r**.ðíl̀z*” should be “<~***gǫ̊r**.ðíl̀z*” and that of “<~***kǫ̊r**.tíl̀z*” should be “<~***kǫ̊r**.tíl̀z*”

Page 230, ‘Table 13’: In the second column and fourth row, the grave accent is missing on the letter *-l̀-*.

Page 230, ‘Table 13’: In the last column and last row, the second syllable vowel is redundantly underlined without consistent reason.

Page 231: In the third line of ‘note 63’ replace “nom./ acc. sg. **garwíl̀*, as well as in the” with “nom. sg. **garwíl̀*, as well as its absence in the”.

Page 233, ‘Figure 13’: The ellipsis for laminalised low vowels (2) and the circle for the rounded low vowels (1) should intersect over the vowel /ɑ̟/.

Page 237: In the ninth line replace “LTSc **hîgîlī̄*” with “LTSc **hǫ̈gîlī̄*”.

Page 237: In the first line of the last paragraph replace “/o̊/ → {ǫ̈} → *ĩ̈*” with “/o̊/ ~> {ǫ̈} → *ĩ̈*”.

Page 237: In the third line of the last paragraph replace **{/mg̊lǫ̈kîz/}* with **{/mg̊lo̊kîz/}* and **{/fg̊rǫ̈þî/}* with **{/fg̊ro̊þî/}* (since the front umlaut, although context-dependently realised phonetically, was not yet distinctive).

Page 240: In the penultimate line replace “After (xvi.)” with “After (xv.)”

Page 241: In the second line delete “/ acc.”

Page 242, ‘Figure 14’: In occurrence to the right replace “non-ART” with “non-ATR”.

Page 242: In the subtitle of ‘Figure 14’ insert “prominent” between “short” and “vowels”.

Page 243: In the twelfth line replace “<*LASc *stjɔrnꝏ̊*” with “<LASc **stjɔrnꝏ̊*”.

Page 243, ‘note 82’: In lines 12-13 replace “the form for ‘shields’ would regularly have had *jo*-breaking as in **skêldꝏ̊n* >**skjǫ̊ldꝏ̊* (see nt 57)” with “the forms for ‘shields’ and ‘swords’ would regularly have shown rounding umlaut without breaking as in **skêldꝏ̊n* > **skøldꝏ̊* (see nt 57) and **hêrǫ̊n* > **hørꝏ̊* (see nt 59)”.

Page 243, ‘note 82’: In the penultimate line replace “described and required by later OSc data” with “described, which is required by later ON data”.

Page 245 ‘note 84’: Insert “main stressed” after “all” and before “palatal vowels”.

Page 245: In the seventh line the word “occurred” should be inserted after “/a̯/ > /a/” and before “in all instances”.

Page 246: In the third line of ‘Section 7’ the word “adjacent” should be inserted after “vowels between” and before “syllables”.

Page 249: In entries Johnsen, S. 2003 and 2005 delete “Stausland” (this is an anachronism being a surname not adopted by the author before 2009).

Page 251: In entry for Schalin, J. (forthcoming) replace “paper and Schalin 2017” with “paper, Schalin (2016) and Schalin (2017)”.

Page 252, Appendix 1: In entry for {ä} replace reference to “Nt 61” with “Nt 65”.

Page 252, Appendix 1: In entry for ï (LTSc) replace “–” with “+” in column specifying the feature [hi].

Page 252, Appendix 1: In entry for ǫ̊ (ASc) replace “+” with “∅” in column specifying the feature [bk].

Page 253, Appendix 1: In section of ‘[Long] > [Prominent] PSc vowels’ add a note to the title for the column ‘[nsl]’: “on nasal vowels see note to F6 & comment in subs. 6.4.3” and remove the feature values (“∅”) for all eight entries.

Page 253, Appendix 1: In the section of [Long] > [Prominent] PSc vowels in the entry for ǣ̄/æ̂: (LTSc) replace “æ̂” with “ǣ̄”.

Page 253, Appendix 1: In the section of [Long] > [Prominent] PSc vowels in the entries for ā/a:, ǭ̄/o̜: and ū̜/u̜: add note to the intersection with the column titled [crnl] reading “[–crl] in LTSc”.

Page 254, Appendix 1: Entry for “ʊ̯” should be entry for “ʊ̯̊”.

Page 254, Appendix 1: Entry for “ʊ̯̊” should be entry for “ʊ̯”.

4 Synthesis of findings

The summary chapter would not be complete without comparing the conclusions of the respective papers. Some interesting synergies between them are discussed in this section, with the potential to synthesise results here and in further studies. This chapter is easier to assimilate after reading the published papers.

4.1 Preliterary Scandinavian phonology

The idea of a panchronistic and clearly perceptible allophonic front umlaut reconstructible all the way back into Northwest Germanic was discussed in SUBS 2.1.2 and 2.2.1 above. The theoretical basis of structuralist phonology enabled such conclusions since, with very little cost to explanatory economy by decoupling the phonematics of Northwest Germanic vowels from their phonetic realisation, the conclusion could be avoided that front umlaut had emerged more than once in several descendants of Northwest Germanic. This was done despite the cost of explaining why the distribution of fronting in the vocabulary was far from the same in the different Germanic branches. At an even higher cost to explanatory economy, complex solutions to this problem were proposed, involving exceptionless phonetic fronting and subsequent conditional reversion. Rules-based synchronic phonology has continued to permit the reconstruction of non-underlying umlaut in Northwest Germanic surface phonetics. Thus hypotheses based on reversion of post-lexical umlaut continue to be formulated ([P4]: Section 7).

One obstacle to such explanations is the ample corpus of loanword etymologies which include no observable correlation between Finnic front vocalism and the presence of pre-syncope fronting triggers in their originals (see SUBS 2.2.1 above). Back-vocalism is even there in words which exhibit an indication of beginning syncope, such as *kari* ‘skerry, rock’ ← **skarja* > *sker* ‘skerry’ ([P5]: nt 65).

There is scope for more theoretical reflection on why allophonic umlaut is not reflected in Finnic loanword data. There could be a link to the assumptions on phonologisation of umlaut touched upon briefly in the introduction of ‘subs. 6.2’ in [P5], which foresees three stages. In the first stage a precursor of umlaut was spread phonetically and irrespective of word boundaries. In that stage it was mainly driven by an easing of the co-articulatory effort. It is envisaged in [P5] that this stage may have started early and constituted a common feature in Northwest Germanic. Since this tendency for regressive remote assimilation did not obey word boundaries, its results were not yet interpreted by language learners as lexical phonological generalisations. At this stage it should have taken clearly articulated strong triggers to accomplish even a weak influence on the targets. Taking into account the lack of reflexes in the Finnic loanwords, the acoustic amplitude of co-articulatory modification must still have been very modest.

In a second Post-Proto-Scandinavian stage, word boundaries became significant and the metaphony passed from a phonetic tendency to phonological generalisations. This second stage may have been very sensitive to trigger weakening, to which it then became inversely correlated; the less salient the trigger was, the more emphasised the realisation of the phonological rule must have become to compensate for the fading audibility of the trigger. In [P5] (subs. 3.2) an initial assumption applying to this stage was coined the Inalterability of Proper Feature Constraint (IPFC). According to it, any vowel phoneme in a position of main stress was constrained from changing in violation of its properly contrastive features (cf. Bale et al. 2014). Thus [+back] vowels did not become [–back] under the influence of a fronting trigger but [–coronal] vowels acquired [–back] allophones instead.

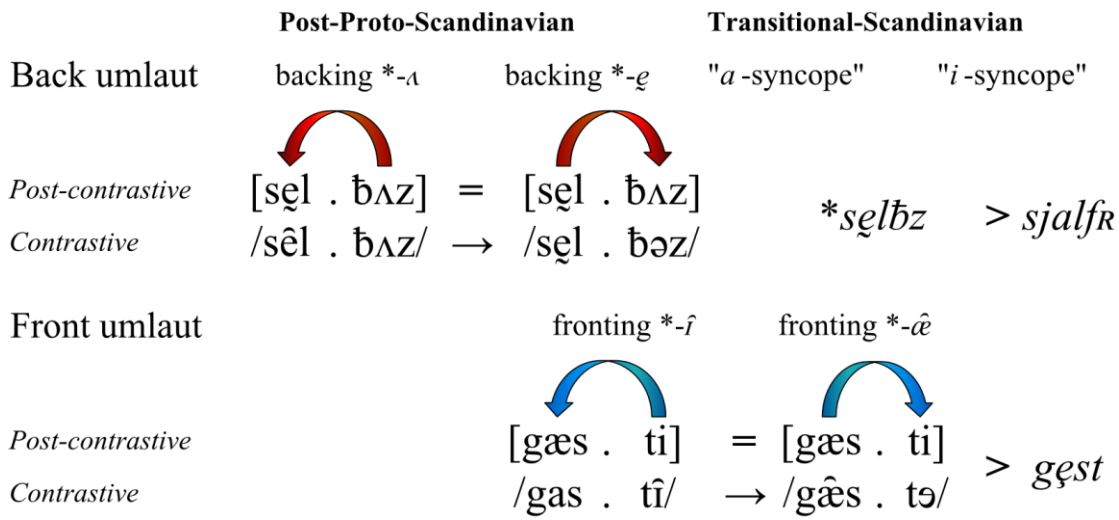

Figure 12. An imaginable scenario for phonologisation before syncope.

This constraint may have implications for the understanding of umlaut phonologisation. One notable logical consequence of the IPFC is that predictability worked in both directions before trigger loss. Owing to the IPFC umlaut allophones were never identical with existing phonemes; thus their feature specification was unique and contained all the information needed to predict the critical feature of the trigger vowel.

With salience tipping in favour of the target vowel, restructuring of the underlying form could occur with no consequence on the surface. As a consequence, no qualitative underlying specification was needed to derive the former trigger vowel′s surface quality, which had become reversely predictable on the umlaut vowel in the former target syllable. By this triggers and targets had swapped their functions. After this, syncope could occur merely as an operation of removing an empty set, with structural consequences only for syllabification and quantity, but not for other information content of vowels. In this way umlaut may effectively have facilitated or even catalysed syncope. This way of understanding umlaut phonologisation could also contribute to the question of how, if at all, umlaut and syncope were causally related mutually as

part and parcel of a larger process, which conspired to front-load information content (cf. Sigurd 1961).

The stage when salience tipped in favour of the (former) target at the expense of the (former) trigger could also have been when (at the latest) the amplitude of umlaut became perceptible to Finnic speakers, discernible in sound substitutions and traceable in loanwords. As the process of front-loading phonological contrast would have enabled trigger loss without information loss, it could have expedited syncope in a self-feeding process. Accordingly, the stage corresponding to salient allophonic umlaut (in a structuralist sense) should have been remarkably brief. This issue requires further scrutiny.

4.1.1 Revisiting diphthongs and the 'palatal r'

While the research in [P1] on regressive palatal diphthong assimilation and the umlaut analysis in [P4] and [P5] can be further compared and synthesised, these also shed light from different perspectives on the phonological specification of preliterary Scandinavian 'palatal *r*', which is discussed in each of the three papers. In [P4] and [P5] the essence of this fricative is inferred from its activity as a fronting trigger. It had emerged from PGmc **z* and ultimately coalesced with OSc **r*. During this development it triggered laminalisation of some preceding vowels, at least in cases of '*ʁ*-umlaut',[62] but also (according to [P4]: Section 3) in cases of *iʁ*-umlaut.

In [P1] the sound value of this 'palatal *r*' is addressed from the perspective of Finnic loanword evidence. Special attention is given to the apparent incipient rhotacism in **gaiza*- (or **gaiʁa*-), which before developing into ON *geir*- 'spear' was borrowed as northern Finnic *kaira* 'gimlet, auger, etc.'. In this loanword the substitution of Finnic **r* for PSc **z* > OSw **r* ostensibly indicates a late Viking Age borrowing event, while the substitution of Finnic **ai* for the diphthong, prior to palatal assimilation, appears to contradict that indication and requires a date which was earlier by several centuries, even if it is not perfectly clear just how many.

This chronological paradox has inspired Tette Hofstra (1995: 97) to invoke an Old Gutnish loan original **gair* for this etymon. His explanation, however, creates more problems than it solves. The Finnish back-vocalic diphthong *-ai-* is by no means the only reason why the borrowing of Fi *kaira* cannot possibly postdate the late Viking Age merger of **ʁ* and **r*. The Finnish reflex of an unreduced syllable structure in the loanword *napakaira* testifies to the same. This loanword corresponds both in meaning and form to OSw *navar(e)* and is likely to be borrowed as a compound from a form antedating the loss of the second syllable in TSc **naƀagaîz*- (or at least antedating the

[62] The '*ʁ*-umlaut' was active in western Scandinavian, as well as in Övdalian and Gutnish geographically distributed far apart in the east ([P1]: 254; [P4]: subs. 3.2) and in some northern dialects of Swedish.

loss of the velar onset *-g-* of the third syllable). This argument is clearly stated in [P1] (pp. 253–255). Furthermore, Old Gutnish cannot possibly be the source for the Sámi loanwords, which also testify to some kind of an early acoustic "rhotacism" in their originals (Heikkilä 2014a: 110–111, 113,121–122).

As concerns the other side of the paradox, the chronology of the palatal diphthong assimilation needs not necessarily be quite as early as often alleged. [P1] (pp. 258–259) notes the flaws in the standard argument for an early PSc palatalisation of **ai* into **æi*. It is based on the final devoicing rule, which operated on obstruents which were word-final even before *a*-syncope. The ON preterite *sté* 'stepped' (cf. *hné* 'kneeled') would allegedly have developed from **staig* > (still before devoicing) **stæig* > (still before *a*-syncope) **stɛiχ* > (concurrently with **aiχ* > **āχ* cf. ON *á* 'owns' from *eiga*) **stēχ* > etc. Nonetheless, it is perfectly conceivable that the monophthongisation rules **aiχ* > **āχ* and **ɛih* > **ē(h)* were different from each other both in time and mechanism. Where PSc **aiχ* > **āχ* was a clearcut assimilation to a velar fricative that remained undeleted, the monophthongisation of ASc **stæih* > **stɛih* > **stē(h)* could occurred later, and perhaps even been parallel or integral to the compensatory lengthening, which occured generally when postvocalic *-h#* was unconditionally omitted in a much later development. Since the monophthongisation rule need not be one and the same, word-final devoicing as such does therefore not preclude the existence of a synchronic PPSc contrast between **-āh#* and **-aih#*.

This revised chronology makes it possible to better unify the dates for palatal diphthong assimilation with that of front umlaut, which is a great advantage in terms of explanatory economy. By means of regressive diphthong assimilation, features pertaining to the offglide were in preliterary times levelled to the syllable nucleus (E. Haugen 1982: 29). Indeed there are *a priori* no good reasons to set up an analysis, which would be separate either in chronology or in theory from the analysis of the umlauts. The parallels are only too obvious, as both are regressive in character and affect the target vowels very similarly.

Assuming that the diphthongs were underlying vowel sequences, the progression of events may also be implied from the analysis in [P5]. As concerns the PSc diphthong */-ɑi̯-/ the assimilation may have proceeded in two stages. During the interval between PPSc and ETSc the dorsal PPSc nucleus */ɑ/, owing to the contrast shift promoting [low], would have lost its specification for [–coronal] and become an underspecified low ETSc vowel, which lacked any specification for tonality features ([P5]: subs. 4.4.2). Further, during the same first phase the non-round PPSc glide **i̯* would have acquired a coronal feature and become umlauting ETSc **î̯* ([P5]: subs. 4.2 and 6.3.2). The restructuring of PPSc dorsal */ɑi/ into ETSc */aî̯/ would have removed any obstacles to regressive laminalisation of the nucleus, with a LTSc */æî/ resulting in a next phase concurrently with front umlaut around 600 CE, as exemplified in later Viking Age runic **stæin(n)** 'stone'.

Nonetheless, even with the additional leeway assured by these assumptions, the chronological paradox posed by the loanword *napakaira* remains disturbingly difficult; while the completion of the rhotacism in the meaning of phoneme merger with Germanic */r/ still belongs to the late Viking Age, the loanwords discussed, which contained a rhotic substitute, must be no younger than the period of front umlaut. Hence, in order to explain the Finnic (and Sámi) rhotics we need to understand what sound value of a TSc fricative *z in an intervocalic position could acoustically enable its substitution with Finnic /r/ rather than /s/, /h/ or /j/, whether as a matter of underlying phonological specification or one of perception by Finnic speakers.[63] [P1] countered a suggestion attributed by Rolf Theil (2012: 57) to Harald Bjorvand, stating that the phoneme was a palatalised trilled fricative "[r̝ʲ]". Palatalised vibrants are universally very rare since the tongue body should simultaneously be raised and fronted to achieve palatalisation as well as backed and lowered to sufficiently relax the tip of the tongue to enable the trill. A palatalised trill cannot be made fricative without losing its status as a proper vibrant as in Polish or its palatal articulation as in Czech (Żygis 2004: passim; Kavitskaya et al. 2008).[64] Unlike in Slavonic, in preliterary Scandinavian no systemic phonological motivation pushed the phoneme into combining the three features into such a highly marked and typologically odd articulation.[65] At the end of the discussion in [P1] I was ready to accept allophony in the source language and a less obvious substitution practice, but made perfectly clear that at least one of the two, palatal or trilled articulation, must be excluded from the explanation in order to allow for a fricative. I also called for a more theoretical phonological examination of the matter.

After the discussions in [P4] and [P5] of the phonological activity that characterised the phoneme, the challenge to determine its phonological specification in the intermediate stages is now worth revisiting. Insofar as the loan original of Fi *kaira* is concerned, below I propose the following sequence of sound change: PreSc **gaiza-* > (younger) PSc */gɑɪ̯z̻ʌ-/ > (after *a*-syncope) PPSc */gɑɪ̯z̻-/ > ETSc */gaɪ̯z̻-/ > (after fronting) LTSc */gæɪ̯z̻-/ > ASc */gɛɪ̯z̻-/ > OESc **gæiʀ* (cf. Sw *gere*). The loan original would thus be (younger) PSc */gɑɪ̯z̻ʌ-/, where the contrastive features of the fricative /z̻/ is the issue to be resolved.

During the umlaut period the phoneme was a contrastively laminal alveolar fricative, which at least in intervocalic contexts appeared as acoustically non-strident but

[63] The possibility of a substitution with Gulf of Finland Finnic /j/ is supported by only one etymology, namely the Finnish fish name *harjus* 'Thymallus thymallus' or 'vulgaris', which could originate in **harzuz* 'ibid.'. LägLoS (s.v. 'harjus') however discards the etymology because an autochthonous derivation may be a better explanation.

[64] Polish phonology requires a similar highly marked phoneme but it is realised as a sequence initiated by a flap and followed by a palatalised palato-alveolar fricative (Żygis 2004: 147f.).

[65] This problem is largely evaded in the phonetic discussion in Painter (2012). He also fails to consider all the relevant diachronic and phonological evidence discussed here.

buzzing *[ɻ̪ˑ]; the case for this is made below. To keep symbols simple and not too unconventional it will be denoted ‘z̪’, which also was the older PSc sound value in all phonological contexts. The known facts about the phonological origin, activity and destiny of this phoneme, and about the development of the loan original *naƀagaiz̪ʌ- ‘auger’, are, in chronological order:

(1) The phoneme first originated in a Pre-Germanic sibilant /s/, which before the emergence of PGmc had become voiced /z/ by Verner′s law.

(2) Complete assimilation of /z/ occurred before the period of *ʁ*-umlaut in the sequences *-zn-* > *-nn-* and *-zð-* > *-dd-*.

(3) A devoicing of final obstruents occurred (Grønvik 1998: 120) after the change *aiχ#* > *āχ#* (where *aiɡ#* did not participate), but before the PPSc apocope under (4) below. Instances of *-z#* do not seem to have changed to *-s#* under this rule, as exemplified by **waz* > *var* ‘was (3. pers.)’ and numerous endings such as *-îz#*, *-ōz#* and *-ēz#*, all terminating in *-z#*. This suggests that the contrastive difference between **z̪* and **s* was no longer [voice], and thus that **z̪* had become contrastive by another feature.

(4) During PPSc the stem vowel was deleted through early *a*-syncope, in the word for ‘auger’ m. acc. sg. **naƀagaiz̪ʌ* > ETSc **naƀagaîz̪*.

(5) During TSc a tauto-morphemic sequence *-îz̪-* triggered front umlaut where the sequences *-ið-*/*-iþ-*/*-is-* did not. The difference in the laminalising contrastive feature of the vowel originated in a PreSc fronting development, which occurred between (2) and (5) and was conditioned on the following fricative /z̪/ ([P4]: subs. 5.2; [P5]: subs. 5.2.2). Hence, some time before productive *i*-umlaut, /z̪/ had contrastively differed from /ð/, /þ/ and /s/ in its place-of-articulation feature.

(6) During TSc a vowel *-î-* followed by *-z̪#* was syncopated, for example in 2. pers. sg. ETSc **brûǒ.tîz̪* > LTSc **brûǒtz̪* ‘you break’ just as in the 3. pers. ETSc **b^{A}riutîþ** (DR 357 Stentoften) followed by LTSc **b^{A}rȳtz̪** (DR 360 Björketorp) ‘[whoever] breaks’, while the same vowel was spared syncopation when followed by the moraic sonorant *-r#* as in ETSc **af.tîr* > LTSc **êf.tîr* ‘after’. By this prosodic measure /z̪/ still patterned as a fricative.

(7) During TSc the voiceless non-strident fricative /þ/ was eliminated by voicing or complete assimilation in all positions except word-initially (E. Haugen 1982: 60f) and while /þ/ generally developed into /d/~[ð] it merged with /z̪/ only very exceptionally, namely in a context of paradigm levelling after a coronal vowel in the 3. pers. endings of the present indicative, as in **b^{A}riutîþ**, later **b^{A}rȳtz̪**.

(8) After early syncope a TSc/ASc /z̪/ could still became assimilated into a preceding consonant /l/, /r/, /s/ or /n/, but not into /d/~[ð]/ or /t/.

(9) Before or after (8) the medial syllable was syncopated in the word for ‘auger’ **naðʌgæîz̪* > ASc **naðgëïz̪* (see discussion on timing in [P5]: subs. 6.5.2).

(10) In the process of a later vowel reduction, which occurred in the ninth century (after the attestation in Rök Ög 136 of **karuz̪** > *gǫrr* ‘ready’), the phoneme /z̪/, unlike the sonorant /r/, still patterned as a fricative on account of not carrying weight outside the main stressed syllable, which in turn reveals its lower sonority ([P4]: subs. 3.1 with references).

(11) Antedating full merger, possibly after sonorisation and in a process of redistribution in the vocabulary, former /z̪/~[ɻ̪ˑ] now /ʀ/~[ɻ̪] was often realised as [r] or [ɹ] after apical consonants while /r/ became laminal [ɻ̪] word-finally after front vowels (cf. Larsson 2002: 33).

(12) In a process reaching complete complementary distribution, the residues of the phoneme /ʀ/ merged with /r/, not earlier than the tenth century in the west and gradually during the following centuries in the east. In parts of eastern Scandinavian, deletion may have occurred instead of that merger in some phonological contexts (Widmark 2001:136–139).

This chronology, which is based on a phonological logic of contrastive features, prosodic behaviour and other phonological activity, provides good guidance regarding the essence of the phoneme. This phonological approach has clear advantages over more phonetic historical conjecture (Painter 2012) or other past research approaches (Tjäder 1986; Larsson 2002: 28–31 with references).

Firstly, at least one intermediate stage of phonological significance must be assumed because, in the light of several alternating points in agreement above, throughout the period of umlaut and syncope the phoneme must simultaneously have differed from */r/ by significantly lower sonority, as well as from */s/ on account of a different place and/or manner of articulation. As we see from points (1), (6) and (10) the phoneme clearly remained a fricative throughout the umlaut period. Only a few generations before merger with the approximant /r/ in western Scandinavian, as described in point (12), it had still patterned as a fricative after a vowel word-finally, as in point (10). Thus, any discussion of possible “rhotacism” or “r-like sounds”, so often referred to for the intermediate periods, must clearly exclude all approximants and hence the most typical voiced vibrants /r/ and /ɾ/; this is in agreement with the more cautious formulations in Larsson (2002: 28–31).

Secondly, it is almost equally certain that the feature which contrastively distinguished the coronal fricative /z̪/ from the coronal fricatives /s/, /ð/ and /þ/ during the period of umlaut and syncope was a marked place-of-articulation feature rather than [+voice]. Positive evidence for this is the phonological activity under point (5), which only the fricative /z̪/ was exercising on preceding vowels; negative evidence is the fact that devoicing under point (3) did not cause merger with /s/ and voicing of /þ/ under point (7) also did not cause merger with /z̪/. Further, it could be argued that assuming a phoneme underspecified for [voice], with a voiceless allophone word-finally after

consonants, makes it easier to understand the ensuing reassociation of allophones under point (11). This is because a voiceless allophone of a coronal fricative [ɻ̥˖] (originating from *z̪* as in ASc **bɛtz̪* ‘better’ ~> [bɛtɻ̥˖]), would have been very hard to keep apart from a voiceless allophone of a sonorant rhotic [r̥] or [ɻ̥] originating from *r* (as in ASc **witr* ‘knowledgeable, learned’ ~> [witr̥]).

There need not be many intermediate phonematic states between PGmc */z/ and literary OSc <r> ~/r/. Besides loanword evidence few other indications suggest that the fricative, which had diverged from PGmc */z/ between points (2) and (3) and was still different from OSc */r/ between points (10) and (12), would have undergone many changes in between. The contrastive articulatory feature of *z̪* that interacted with neighbouring segments in terms of fronting under points (5), (8) and (11) was plausibly the same as the one distinguishing the phoneme from the other fricatives under points (3) and (7). The assumption of a place feature is certainly consistent with the development mentioned under point (11), according to which /r/, when occurring word-finally after front vowels, was spelled with the rune for /ʀ/ in the Younger Futhark.

The place or manner feature in question has often been hypothesised to have been [palatal] owing to the palatalising phonological influence of the fricative on a preceding back vowel manifest in *ʀ*-umlaut (Larsson 2002: 32f). In [P4] (subs. 3.3 and 5.2) this argument has been honed and modified in the light of *iʀ*-umlaut under point (5), where the phoneme *z̪* is argued to have laminalised a non-round descendant of PlGmc /i/. Undisturbed by such laminalisation it became dorsal *ï*, presumably a central vowel. An assumption that the contrastive feature involved in the activity was a specification for laminal articulation may explain not only the assimilation resulting in a coronal vowel */î/, but perhaps also the laminalisation *-nz̪# > -n̪#*, which was preserved for example in Övdalian nasals that had absorbed an adjacent word-final *-z̪#*, as in *-nʀ# > -n̪#* ([P4]: subs. 3.3; Nyström 2000: 27–29, 44 nt 5).[66]

Some further negative evidence is underused in research on this topic and certainly favours laminal over palatal specification. Namely, while the TSc/ASc phoneme *-z̪#* in word-final position assimilated into a preceding /l/, /r/, /s/ or /n/, it did not assimilate into a preceding /d/~[ð], born from merger of /d/ and /þ/, nor into /t/, /k/ or /g/, but

[66] Among the subminimal pairs quoted by Nyström one properly minimal is *be´kkįn* ‘pelvis’ (← Old Swedish n. *bœcken* ← Low German *becken*) as opposed to *be´kkįn̪* ~ON *bekkinn* ‘the brook’. It is conceivable that this contrast was qualitative at an early stage; the laminal feature of the assimilation product emerged in contrast with the unaltered apico-alveolar phoneme, i.e. the one that had not assimilated with /z/. The same distribution is evident in Scandinavian dialects, where the determined enclitic article of the masculine and the feminine are most often kept apart. This argument is complicated by the fact that laminalisation may also have arisen post-contrastively as a feature conditioned on quantity (gemination), subsequently lost in weakly stressed syllables. Elsewhere in the article, Nyström views laminality occurring after main stress as conditional upon quantity and supports it by acoustic measurements of duration.

without exception in those contexts remained an independent part of a sequence, as in *breiðr* < **braiðʌz̪* ‘broad, wide’ and *gestr* < *gastîz̪* ‘guest’, *eikr* < **aikz̪* ‘oak’ or *elgr* < **algîz̪* ‘elk’. Had the */z̪/ been palatal +/j/, alveolo-palatal +/ʑ/, palato-alveolar +/ʒ/, or even the odd palatalised rhotic fricative +/r̪ʲ/, some of these clusters would be expected to at least sporadically show a tendency for regressive palatalisation and/or affrication. But no affrication happens in any Scandinavian dialect in this phonological context until the epenthetic vowel is inserted everywhere to separate the sounds again.[67]

Thus, there are many indications that the ‘palatal *r*’ (or *z̪*) was neither palatal nor palatalised. Conversely, the main argument launched in favour of its palatal feature, namely the fronting activity that the phoneme exercised (in particular *ʁ*-umlaut) is not very valid. Palatal or palatalised consonants may be more frequently involved in vowel fronting than laminal ones, but such an argument is unconvincing for two reasons. Firstly, as quoted in [P4] (subs. 3.3 with references) and [P5] (subs. 5.2.2 with references) in some languages coronals, especially anterior coronals, can trigger the same effect. Secondly, to adjust the statistics for the Contrastivist Hypothesis, the rate of occurrence should only be measured against the number of languages in the world that employ laminal, anterior and/or dentalised articulation for contrast between coronals, because this is a precondition for the feature to spread. While such a contrast is not unknown in Europe′s languages, it is not universally nearly as common as one for palatal or palatalised articulation, and therefore not so often recorded as causing fronting.

This process of elimination and inference leads us to the conclusion restated above: the ‘palatal *r*’, by convention also marked <ʁ>, <R> or simply <z>, was a laminal (perhaps also ‘anterior’ or ‘dentalised’) fricative, which may well have lost its specification for voicing by the time of ASc. It only remains to determine whether the fricative remained a strident /z̪/ or could be perceived as a rhotic [ɹ̪ˑ] or whether its allophones could appear in conformity with both characterisations respectively in a complementary distribution. Here we need to return to the borrowing of NFi **kaira* and **napakaira* and the testimony of its sound substitutions. Due to the syllable structure and the diphthong in Finnic, the borrowing event must have occurred within the chronological margin of points (2) and (8) rather than (9) to (12). Thus, it constitutes valid testimony to the quality of the intermediate Scandinavian fricative.

The idea of allophonic distribution, already flagged in [P1], remains attractive. Immediately after a main stressed vocaloid, the phoneme could have been voiced laminal [ɹ̪ˑ], perceived as a rhotic and substituted accordingly by a Finnic /r/; word-

[67] It is not clear what state of Scandinavian vowel reduction is represented by loan originals where Sámi has added a word-final vowel *-ʦɪ* > *-ʦə* etc. (Theil 2012: 60). This occurs in Scandinavian *i*-stems and *u*-stems (and in the consonant stems **wrōtz* and **gaitz*, which Theil erroneously represents as *i*-stems). The Finnic ethnonym **rootʦi* has been suggested to constitute a similar, albeit unparalleled Finnic sound substitution (see NT 37 in SUBS 3.4.4 above).

finally in non-initial syllables or after a consonant it could have been strident /z̪/ or voiceless /l̥̪ˑ/ dropped upon borrowing, that is, substituted by omission. Such allophony could be reflected in Sámi. Here rhotic substitutes occur medially, as in *divri* < **tiwːrī* < **tiwrē* < **tiwra* ← **diuɻ̪ˑa* 'animal, insect', consistent with the evidence of *napakaira*, while in word-final position the phoneme is substituted by sibilants, as in northern Sámi *divrras* < **tiwrəs* < **tiwrɪs* ← **diuriɻ̥̪ˑ* 'expensive, costly' (Theil 2012: 60, 65; cf. Heikkilä 2014a: 110–111, 113,121–122).

This leaves us with a phoneme that strictly should be marked [ɻ̪ˑ] in phonetic representation, remembering that its allophones could have been devoiced or strident. On a balance it would seem graphically reasonable and economical to represent the phoneme by a conventional <z>, as necessary subscribed by a square <z̪> or a plus sign <z̟> below it, keeping in mind that the stridence chracterising sibilants is not contrastive for the phoneme, and hardly the voicing either.[68] This synthesis of the findings in [P1], [P4] and [P5] is of course not the final say on the topic but should be examined in the light of the research mentioned in Larsson (2002: 28ff), for example the considerations of a broad range of attested data by H. Pipping (1922: 163–174).

4.2 Scandinavian language contact to Finnic and Finnish

The number of Scandinavian loanwords in Finnic declined quite sharply in the era of umlaut and syncope. This change happened in the sixth century: the arguments for this plunge may be *ex silentio*, but quite valid in the light of the large corpus of borrowings (SUBS 2.2.1 and SUBS 4.1 above). This could have correlated with a collapse in language contact, but other sociolinguistic or extralinguistic reasons may also have been important. The speakers of Finnic may have arrived at a higher level of sociolinguistic prestige and started to favour autochthonous derivation at the expense of borrowing. Hierarchies of perceived prestige may also have tilted towards eastern neighbours and dialects in the North Finnic group, perhaps affected indirectly by the climate disaster (Tvauri 2014). A case for this may be strengthened by an incipient influx of Slavonic loanwords in North Finnic; even if the first trickle is difficult to date precisely it may perhaps coincide roughly with the same period (Kallio 2006). For sure these changed trends in language contact could be due to some sort of socio-economic and/or political disruption in eastern Sweden, perhaps prompted by the decade of climate disaster beginning in 536 CE (Löwenborg 2012).

[68] The phoneme could also be marked /ð̪/ but this calls for an analysis of what place of articulation ASc *<ð> represents. In light of the discussion in [P4] (p. 31 with references) it would have to be posterior apico-postalveolar, and be marked /ð̲/ to maintain the distinction. This in turn would be confusing and would moreover highlight the discrepancy beween the graphemic conventions for representing Ancient Scandinavian with that of IPA, where <ð> is marked for dental articulation.

Further, an eastward tilt in sociolinguistic prestige could have served as a filter for Scandinavian lexical items other than genuinely new concepts associated with the seafaring and maritime trade picking up intensity in the eighth century. The Scandinavian etymology of the Finnish word *reitti* 'route' (< *'sea route') is thoroughly discussed in [P5] and [P1] and (with due reservations) dated through the context of the seafaring during the Viking Age. A remarkably large portion of the relatively few loanwords that show clear signs of being older than OSw but younger than PSc is linked to trade and maritime passage. This can hardly be a coincidence. For example, the Finnic (incl. Estonian) word *markka* 'unit of currency or weight' appears reconstructible to Coastal Finnic as **markka* but could well also have been natvised in this Finnic subgrouping somewhat later (LägLoS: s.v. 'markka' "Vielleicht... schnell verbreitendes Wanderwort"). For sure the Finnic stem vowel in *markka* is not a substitute for a corresponding vowel of the loan original, simply because the original was a consonant stem **markz̥* or a feminine *ō*-stem TSc **markv* > EASc **markv̊*. Some expansive natvised words are datable to the eighth century ([P4]: 428 with reference; cf. SUBS 2.2.2 and NT 14 above) and the word could belong in this context. Given that a stem vowel *-a* (in contrast with typical *-i* in young loans) was in productive spontaneous use in Viking Age borrowings, it would seem permissible to hypothesise a similar age for (exclusively) Finnish *vaaka* 'scale' ← f. **wāg* < EASc **wāgv̊* (see also SSA: respective entries; Häkkinen 2007 [2004]: respective entries; Hofstra 1985: 206).

If we maintain that these two words seem earlier than OSw they may be concurrent with the word for 'trade, deal' *kauppa*. It is not clear whether it is reconstructible to Coastal Finnic **kauppa* or natvised by borrowing, like the words *risti* 'cross' and *pappi* 'priest' and perhaps like the word *markka*. The sound correspondences would not stand in the way of a Proto-Scandinavian stem vowel substitution *-ʌ* → *-a*, but on the other hand nothing requires it; on balance it seems more appealing to date this loanword to the same period as the borrowing of *kaupunki* 'town', which appears later. That borrowing must be later on account of the latter syllables and the young origin of the Scandinavian loan original; the loan origin-nal is an autochthonous compound based in its first part on a Vulgar Latin borrowing **kaupa*. The latter part contains a post-syncope reanalysis of the noun **-angrʌ-* into a suffix m. nom. sg. *-ung-(r)* (SEO: s.v. *köping*; SSA: s.v. 'kaupunki'; Häkkinen: s.v. 'kaupunki'; Hofstra 1995: 96). The reinterpretation of the stem type and the intro-duction of a secondary suffix ablaut both require some time to have elapsed after syncope.[69] Thus the word is

[69] There is a Coastal Finnic verb **kaupp̆pits-* 'to trade, sell'. While it could be derived from **kauppa*, it could also be a borrowing from PSc **kaupijan* and in that case also be older than *kaupunki* (LägLoS: s.v. 'kaupita').

clearly not Proto-Scandinavian despite its diphthong *-au-*, which cannot be used to backdate the borrowing for reasons discussed in 3.3.3 above.[70]

Another trade word in the grey zone between borrowings from PSc and OSw is Finnish *äyri* 'monetary unit'. While its distribution is confined to Finnish it could be old as it displays a sound substitution not expected for an OSw original *øre*. Hence an eighth-century borrowing from ASc n. **œyrī* is plausible but not certain.

Prehistoric toponyms are investigated in [P2] and [P3], leading to a number of tentative or uncertain conclusions. It is very difficult to say what these place names reveal of the language contact; for the purpose of the synthesis a few selective remarks are warranted. Ancient toponyms are few in number because there is a natural turn-over over time and the settlement which is instrumental to pass on the names has not always been continuous. Moreover, as spelled out in [P2], toponymic etymologies which are this old are often not falsifiable and very difficult to assess. Their validity will typically remain in indefinite suspension, pending an unattainable verification or falsification. This is probably the case for some etymologies I discuss, such as those for *Karjaa*, *Kjulo* or *Ruotsi*. Yet the case for many etymologies is supported by a critical mass of probable etymologies from the same period, arrived at by the same methodology and representing similar naming practices. It is highly probable that not all of them are flawed and taken together, they make the general picture less uncertain than each etymology assessed in isolation.

The general picture cannot be sustained unless supplemented by knowledge drawn from borrowed appellatives and from other relevant disciplines. This reservation is essential. For the pre-Christian period, the toponymic loan etymologies are neither numerous enough nor certain enough to be verified by themselves. This has further implications; for borrowed appellatives, of which there are plenty, some conclusions may with due reservations be drawn *ex silentio*, but this cannot be done for toponyms this old. The scarcity or absence of certain categories of etymologies does not prove much.

My discussion of the Danish Itinerary does not take sufficient account of this. Based on absence of etymologies I draw conclusions similar to those of Saulo Kepsu (2005: 15), which are not plausible in light of other considerations. Today, I would agree that continuity of toponymy along the western stretch of the sea route could testify to a more continuous Scandinavian familiarity with these locations. Yet I would not go so far as I did in [P2] to use the lack of continuity east of Hangö as an argument *ex silentio* against concurrent Swedish settlement on the coasts of Nyland province.

It seems highly likely that Swedish settlement in Western Nyland was older than the thirteenth-century Itinerary. Firstly, this is because several factors clearly point to a settlement antedating the settlement of Eastern Nyland. These include the contemporary geopolitics, different archaisms in the dialects of Western and Eastern Nyland

[70] A substitution of *-au-* would still have been in use after a diphthong assimilation *au* > *ǫu*.

(Schalin 2014a) and not least the different parish structure with small medieval parishes in Western Nyland and one large parish of Borgå in the east. All imply that Western Nyland was settled before Eastern Nyland. Settlement in the latter began in the thirteenth century, which is when the Itinerary was written.

Secondly, I overlooked at the time of writing [P2] that Swedish settlement hardly started from the archipelago or even from the shores of the Baltic Sea. Rather, settlement structure points to the oldest settlements being somewhat inland and upstream, where the shores of creeks and rivers provided the best unused land for cultivation. It has even been suggested that a main motivation for the crown to encourage settlement was to make available labour for the contruction and maintainance of bridges along the coastal main road (Salminen 1993; 2015). This being the case, toponymy in the archipelago of Western Nyland would still represent the names of speakers of Finnish or Estonian fishermen at a time when the first Svea or Göta settlers had established themselves somewhat inland at locations upstream where roads had to cross waterways. The chronology and motivation of Swedish settlement will undoubtedly continue to benefit from further cross-disciplinary research.

4.3 Preliterary Scandinavian language active in time and space

In this subsection the more theoretical and phonological elements of the research are used to shed light on the historical context for preliterary Scandinavian language development. By necessity the observations will be somewhat more hypothetical and more open to differences in opinion than those based directly on more exact methodologies of historical phonology. This summary is useful for two audiences. Firstly, it may reveal tacit or subconscious assumptions made in the papers to researchers in the field. Secondly, we are encouraged by those authorities in society who aspire to guide and steer academic research to communicate applied research results and the implications of results to the society and to the general public. This objective may require contextualision beyond pure linguistics.

The development of preliterary Scandinavian may be divided into three eras, in which sound systems changed at different paces (see TABLE 4, SUBS 2.2.2 above). The first Proto-Scandinavian era of slow development includes the late Roman Iron Age and beginning of the Migration Period (appr. 160-500 CE; cf. MAP 1, SUBS 1.2 above); the second TSc and ASc era of rapid vowel reduction and umlaut corresponds to the rest of the Migration Period, extending over and somewhat beyond the Merovingian or Vendel period (appr. 500-850 CE; cf. MAP 2, SUBS 2.1.1 above); the third and last Old Scandinavian era corresponds to most of the Viking Age and the mainly historical era of Christianisation, again with sluggish sound change. The middle period is distinguished by very rapid language development which remains very cohesive over a large area, covering present-day Norway and Denmark and extending to most of

Sweden. The vowel system changed significantly, repeatedly and at frequent intervals (TABLES 1 and 2 and SUBS 3.5.5 above).

In contrast, change had been slow in the first period. Runic Proto-Scandinavian had appeared as one of many Northwest Germanic vernaculars and, as concerns the pace of sound change, perhaps the most preserving and archaic of them all; as concerns syncope in particular, runic Proto-Scandinavian certainly appears more archaic than Gothic and attested West Germanic languages. What happened during the Migration Period to accelarate development? This is not a new question, and the causes have been sought in the migrations themselves. Some domains in southern Jutland, previously inhabited by the Angles, were settled by Danes, which may have broken the Northwest Germanic dialect continuum (Nielsen 2015: 51 with reference to Kuhn 1955). The settlement of Slavonic Vends in areas previously inhabited by Saxons may have had a similar impact. Given that the Danes may have originated in the Scania region, they may have reinforced language unity between southern Jutland, the Scandinavian Peninsula and the islands in between.

Are these explanations sufficient, or even crucial (cf. Andersson 2012; 2017)? Real-world language use is not governed by the logic of maps (Frog & Saarikivi 2015: 67) and the North Sea would not have separated languages, especially in an era when land routes were often slower than maritime ones. Social and sociolinguistic reasons may be more important, such as the breakdown of extra-Scandinavian networks and the rise of intra-Scandinavian networks, coupled with a context of high-prestige intra-Scandinavian hierarchies, elites or polities. The Christianisation of Britain and the Merovingian realms should have been a key factor.

Further, there is a striking chronological match between the abrupt turn in linguistic development and the great climate disaster beginning in 536 CE and continuing for almost a decade (Löwenborg 2012; Tvauri 2014). This event is surely a much better explanation of the simultaneous slump in the number of Scandinavian loanwords in Finnic and could by analogy have had implications for the split in the Northwest Germanic dialect continuum.

One innovation in the vowel system travelled from western Scandinavian to eastern Scandinavian. This novelty was the promotion of a contrast for [low] above the contrast for [coronal] (i.e. laminal). This is another implication of the research in [P5] (subs. 4.4.2 and 6.3). Between the occurrences of *r*-breaking and *a*-breaking in Post-Proto-Scandinavian the reordering of [low] above [coronal] affects western Scandinavian, while the corresponding reranking affects eastern Scandinavian later, but still before the end of the ETSc era in anticipation of front umlaut.

While this change travelled from the west to the east, another western innovation stayed behind or travelled too slowly to make a change. Laminalisation of dorsal **ï* > **î* in fronting contexts before the umlaut period proper occurred in the west only ([P5]: subs. 4.5.2 and 6.2.1). A converse dorsalisation of **î* > **ï* in backing contexts affected both Gutnish and Dalecarlian ([P5]: nt 34 and nt 70). The fact that Gutnish

and Dalecarlian share this old innovation strongly suggests that they may have lost a former geographical unity and that the ancestral vowel system of Old Swedish, which is preserving and not separable from that of Old Danish, was intrusive in the Mälaren region and on the Swedish east coast. A similar distribution concerns the lack of *ʀ*-umlaut in Old Swedish, with occurrences in Old Gutnish, in Övdalian and sporadically in the Norrland dialects (see NT 62).

Map 6. Indicative direction of the spread of Scandinavian phonological innovations in the Migration and Merovingian=Vendel Period

The issue in focus here is possible paths of phonological innovations in Scandinavian. Arrows do not primarily symbolise migration.

This gives us MAP 6. The arrows show how phonological innovations were diffused in Scandinavia roughly between 400 and 700 CE. These arrows do not primarily represent migrations but a trickling progression of socially conditioned tendencies to mimic changes in pronunciation, which spreads through high-prestige social networks. Of course this process may, nonetheless, have involved some resettlement of land-owning elites (Löwenborg 2012) and in the north some expansion of settlement. The term 'incipient' is used because this map differs from MAPS 1 and 2; it is not a snapshot of a

certain stage in language development but covers some centuries. At the end of the period we may distinguish 'Ancient Gutnish' and (with greater uncertainty) 'Ancient Dalecarlian' (MAP 2) but at the beginning the situation was like that in MAP 1.[71] Ultimately it is not clear how far west the innovation centre for mainstream PSc, TSc and ASc sound change was. The geographical extension of Ancient and Old Dalecarlian and the nature of their possible dialect continuum to ASc and OSc are also very uncertain.

4.4 Closing remarks

The choice for the compilation thesis to approach the preliterary Scandinavian from different angles has paid off to a certain extent. The thesis includes a variety of interrelated insights with potential to contribute to the larger picture. This SECTION 4 has tied together the research in the five papers selectively, focusing on issues where results intersected and on findings that affect the historical scenarios and may enjoy interdisciplinary interest. An example where loanword research has provided inspiration for umlaut research is the issue of phonologisation of new vowels (discussion around FIGURE 12) and another where it also had great synergies with more thoretical diachronic phonology is the nature of the 'palatal *r*'.

When it comes to the toponymy and the chronological and spatial contextualisation of language history some of the research perspectives listed in SUBS 1.3 and discussed in SUBS 3.2 remain a methodological concern and an open question; how exactly are the insights interrelated and how do they contribute to a more comprehensive understanding of the language development during the investigated milennium?

Undoubtedly the insights on umlaut and contrast in the preliterary Scandinavian language system are interesting from many perspectives which supersedes the scope of the compilation thesis and should merit scholarly evaluation and further development in their own right. Taking up the challenge posed by the very reformative findings and conclusions will impact on our reconstruction of Northwest Germanic and improve our ability to analyse archaisms in Scandinavian dialects.

[71] In terms of chronology MAP 1 is the base-line around 500 CE, Map 2 is the state approximately two centuries later, whereas MAP 6 is intended to be a diachronic sketch of the interval 400–700 CE. This is why the evolving precursors are denoted 'incipient' Dalecarlian and 'incipient' Gutnish in MAP 6.

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